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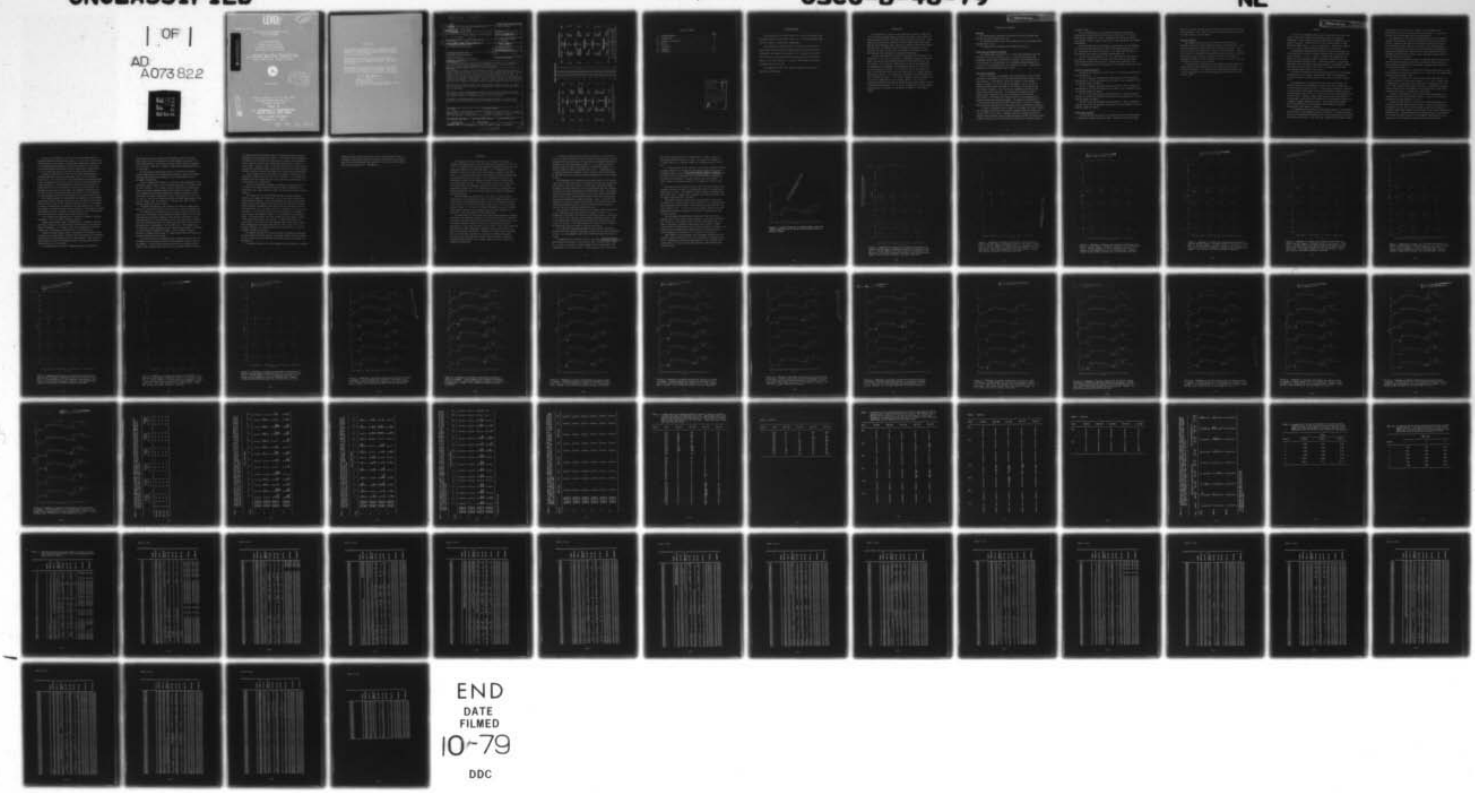

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THE ANALYSIS OF SEDIMENT SAMPLES FOR HYDROCARBONS

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U.S. Coast Guard Research and Development Center
Avery Point, Groton, Connecticut 06340

FINAL REPORT

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16. Abstract

This document is a report on the hydrocarbon content of 1380 individual surficial samples obtained from areas in the vicinity of three proposed Deep Water Port (DWP) Sites in the Gulf of Mexico during six cruises taken between 1975 and 1978. The samples were analyzed using 2 different LC-fluorescent methods, one of which was selective for petrogenic hydrocarbons and one of which detected both petrogenic and biogenic hydrocarbons. Additionally, nutrient chemical analyses and microbiological analyses were performed on sediment samples obtained during the first two cruises.

All data were evaluated statistically and discussed in terms of sources of inputs, effect of season, and significance for formulating an overall monitoring program for the DWP sites.

The results of this study suggest that analysis for both petrogenic and biogenic hydrocarbons should be undertaken in order to more accurately reflect the sources of seasonal variation in hydrocarbon levels at sites of interest.

A method of displaying the data is illustrated and discussed. It allows rapid comparisons of the hydrocarbon content of sediments from the various stations.

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METRIC CONVERSION FACTORS

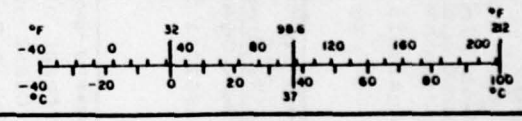
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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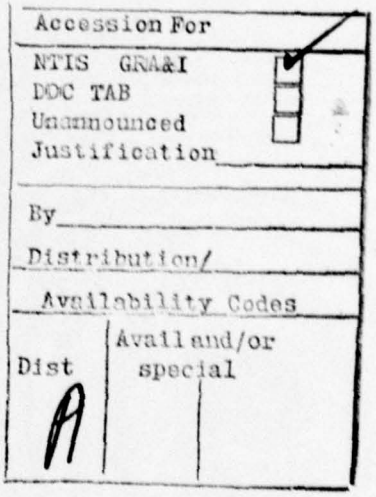

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The professional contributions of the following individuals is acknowledged with gratitude: Mr. Melford Smith, Biological Science Department, Mississippi State University; Dr. Raymond Heiser and Mrs. Pattie Sue Foil, Statistical Services, Mississippi State University; and Dr. D. H. Miles and Ms. M. J. Coign of the Chemistry Department, Mississippi State University.

The assistance of Mrs. Jane Benyo in preparing this report is gratefully acknowledged.

INTRODUCTION

This document is a report on the hydrocarbon content of 1380 individual surficial sediment samples obtained from areas in the vicinity of three proposed Deep Water Port (DWP) Sites in the Gulf of Mexico. These samples were collected by personnel from the United States Coast Guard Research and Development Center during six sampling cruises taken between 1975 and 1978. Two separate chemical methods were employed for the analyses; one which is selective for petrogenic hydrocarbons and one which detects both petrogenic and biogenic hydrocarbons.

The data were evaluated in terms of answering the following set of questions: (1) Is there a difference in hydrocarbon content of the sediments collected at the three deep water port sites during each of the six cruises? (2) Is there an identifiable pattern in the distribution of hydrocarbons in sediments in the immediate vicinity of each of the three deep water port sites? (3) Is there an area in the vicinity of each of the deep water port sites that could serve as a control area for monitoring purposes? (4) Is there any difference in the hydrocarbon content of water port sites? (5) Is there a seasonal (cruise) difference in the level of hydrocarbons at the various station? (6) Is there a significant difference between the petrogenic hydrocarbon content and the total hydrocarbon content? (7) Is there a significant difference between reporting data on the basis of wet weight of sample vs. dry weight of sample?

MATERIALS AND METHODS

Materials

All solvents were high purity residue-free solvents obtained from Burdick and Jackson Laboratories, Inc.

The anhydrous sodium sulfate was reagent grade and was prerinsed with n-hexane prior to use.

All glassware was prerinsed with n-hexane prior to use.

Collection and Handling of Samples

All samples were collected by U. S. Coast Guard personnel under the direction of Mr. Melvin Light of the U. S. Coast Guard Research and Development Center using a Smith-McIntyre dredge. Approximately 200 ml of the top one to two centimeters of a sediment sample was placed in a clean 250-375 ml wide-mouth glass jar and frozen at -20°C. Samples were maintained at this temperature until needed.

Analytical Procedures

Prior to analysis, the sediment sample was allowed to thaw at room temperature (approximately 25°C) and then thoroughly mixed using a clean teflon spatula. Approximately 100 gm (wet weight) of the sediment sample was placed in a 250 ml beaker and weighed. Five to ten gms of anhydrous sodium sulfate was added to the sediment and the beaker and its contents reweighed. Seventy-five ml of n-hexane was added to the beaker and stirred vigorously. The n-hexane was decanted through a powder funnel containing glass wool and anhydrous sodium sulfate. The contents of the funnel were rinsed with 25 ml of n-hexane and the combined filtrates evaporated in vacuo. The sample was transferred to a vial in ethyl ether which was then removed under a stream of nitrogen. The residue was redissolved in a known quantity of chloroform for analysis.

In order to determine the dry weight of the sample, the beaker containing the sodium sulfate and the extracted sediment sample was dried in an oven at 150°C for 3-4 hours, reweighed, and the dry weight calculated. Analyses were performed using a Waters Associates ALC/GPC-502 liquid chromatograph fitted with a FS-770 Schoeffel Fluorometer and a Hewlett-Packard

Integrator 3380A.

For the determination of the combined petrogenic and biogenic hydrocarbons, analyses were performed using excitation at 274 nm and measuring the emission at 370 nm. Chloroform was used as the solvent. This analysis yielded a single peak caused by both petrogenic and biogenic hydrocarbons.

For the determination of petrogenic hydrocarbons only, the analyses were performed using excitation at 403 nm and measuring emission at 418 nm. Chloroform was used as the solvent. The single peak obtained in this analysis was caused by petrogenic hydrocarbons only.

In both cases the content of oil in the sediment was calculated on the basis of a comparison to the area under the curve obtained using a known amount of Empire Mix crude oil. Results were expressed on the basis of nanograms (ng) of oil per gram (g) of sediment, either wet or dry.

Method of Reporting Results

Throughout the remainder of this report, the following abbreviations will be employed.

274 Dry = analyses performed using excitation at 274 nm, measuring fluorescence at 370 nm, and reported on the basis of ng (nanograms) of oil per gram dry weight of sample.

274 Wet = analyses performed using excitation at 274 nm, measuring fluorescence at 370 nm, and reported on the basis of ng (nanograms) of oil per gram wet weight of sample.

403 Dry = analyses performed using excitation at 403 nm, measuring emission at 418 nm, and reported on the basis of ng (nanograms) of oil per gram dry weight of sample.

403 Wet = analyses performed using excitation at 403 nm, measuring emission at 418 nm, and reported on the basis of ng (nanograms) of oil per gram wet weight of samples.

Statistical Analyses

One way and two way analyses of variance were the principal methods of statistical analyses used on the data. Duncan's New Multiple Range

Test then was used on group means to separate the group means into homogeneous subsets. Also, some contrasts incorporating "t-tests" were used to compare some of the site means.

Computer Displays

The program word for the plots is written in Fortran and is disigned for use with a Gould 4800 Electrostatic Printer/Plotter. With two minor changes it produces plots on a Calcomp drum plotter. The main function of the program is to display an outline drawn by connecting a series of longitude-latitude points (in this application, the Gulf Coast line of part of Texas, Louisiana, Mississippi, and part of Alabama) and display the data relational in value to the other data and relational in location to the outline.

The three types of displays for the hydrocarbon levels within the areas covered by the plotted numbers were treated in three ways: (1) averaged and ranked, (2) ranked and the ranked numbers averaged, and (3) the logarithims of the values averaged and the average of the logarithms ranked.

RESULTS

For this study, sampling stations were established at various locations in the Gulf of Mexico from Galveston, Texas, to Pascagoula, Mississippi. These stations were given identification numbers as illustrated in Figure 1. Stations H-6, B-6, and A-2 were located at Deep Water Port (DWP) sites 1, 2, and 3, respectively. Samples were taken at all or a portion of these stations during each of six cruises.

No significant difference was observed in either the petrogenic or total hydrocarbon levels of sediments obtained from the three DWP sites during cruises 3, 4, and 6. Similarly, there was no significant difference in total hydrocarbons and no significant difference in petrogenic hydrocarbons during cruise 5. There was, however, a significant difference in the petrogenic hydrocarbon levels of the sediments obtained from the three sites during cruise 1 and 2 as measured and in total hydrocarbons during cruise 5 (see Table 1).

The results obtained from the statistical comparison of the sediment hydrocarbon levels of samples systematically taken in the immediate vicinity of each of the three deep water port sites are given in Tables 2-4.

The comparisons of the hydrocarbon levels in the sediments from fourteen stations in the immediate vicinity of DWP site 1 during each of four cruises are given in Table 2. There was no significant difference in the petrogenic hydrocarbon levels of the sediments obtained from the fourteen sites during cruises 3, 5, and 6 nor in total hydrocarbons during cruises 3 and 4. However, samples taken during cruise 4 and analyzed for petrogenic hydrocarbons were divided into two significant groups with a number of samples exhibiting overlap. Those taken during cruises 5 and 6 and analyzed for total hydrocarbon were divided into several subsets with a high degree of overlap.

The comparison of the levels of hydrocarbons present in the sediments from 13 sites in the immediate vicinity of DWP site 2 are given in Table 3. There was no significant difference in the total hydrocarbons from the samples taken during cruise 3, but there was a significant difference between

the petrogenic hydrocarbon levels present in the sediments taken during cruise 3 as well as those taken during cruises 4, 5, and 6 and measured for both petrogenic and total hydrocarbons.

The comparison of the levels of hydrocarbons present in sediments obtained from seventeen sites in the immediate vicinity of DWP site 3 (Table 4) indicated that there was no significant difference between the hydrocarbon levels present at the various sites during cruises 3 and 4 nor during cruises 5 and 6 in terms of petrogenic hydrocarbons. A significant difference was observed in the total hydrocarbon levels of sediments collected during cruises 5 and 6 with much overlap present in samples taken during cruise 5.

The levels of hydrocarbons present in sediment samples obtained from each DWP site during cruises 1-6 were contrasted to levels present in similar samples obtained from two stations on opposite sides of each of the three sites (Table 5).

Station H-5 and DWP site 1 (H-6) did not differ significantly in sediment hydrocarbon levels during cruises 1, 2, 5, and 6 but were significantly different during cruises 3 and 4.

Station H-7 and DWP site 1 (H-6) did not differ significantly in sediment hydrocarbon levels during cruises 1, 2, 5, and 6, during cruise 3 as measured on a wet basis, nor during cruise 4 as measured on a dry basis. They differed significantly, however, in petrogenic hydrocarbon content during cruise 3 as measured on a dry basis and in total hydrocarbons during cruise 4 as measured on a wet basis.

Station C-1 and DWP site 2 (B-6) did not differ significantly in sediment hydrocarbon levels during cruises 1, 2, and 3 but did differ significantly during cruises 4, 5, and 6.

Station B-5 and DWP site 2 (B-6) did not differ significantly in sediment hydrocarbon levels during cruises 1, 2, and 3, during cruise 5 as measured on a dry basis. During cruise 6, they did not differ in petrogenic hydrocarbon content on a dry basis, but did differ significantly during cruise 4. The hydrocarbon levels, during cruise 5 as measured on a dry basis, and during cruise 6 for petrogenic hydrocarbons on a dry basis and in total hydrocarbon content (both wet and dry basis).

Station A-1 and DWP site 3 (A-2) did not differ significantly in sediment hydrocarbon levels during cruises 1, 2, and 3 nor in total hydrocarbon content on a wet basis. They differed significantly during cruise 4 in petrogenic hydrocarbons and in total hydrocarbons on a wet basis. Total and petrogenic hydrocarbons differed significantly during cruise 5 on a dry basis and on both a wet and a dry basis during cruise 6.

Station A-3 and DWP site 3 (A-2) did not differ significantly in sediment hydrocarbon levels during cruises 1 and 3 (on a dry basis), during cruise 5 on a dry basis for total hydrocarbons, and during cruises 3 and 6 as measured on both a wet and dry basis for both petrogenic and total hydrocarbons. Total hydrocarbon content differed significantly during cruises 1 and 3 as measured on a wet basis, during cruise 4 as measured on both a wet and a dry basis for petrogenic hydrocarbons and on a wet basis for total hydrocarbons; and during cruise 5 as measured for both petrogenic and total hydrocarbons on both a wet and dry basis.

The results obtained from the statistical comparison of the sediment hydrocarbon levels of samples collected at stations other than the three DWP sites during each of four cruises are given in Table 6. The presence or absence of significant differences in the hydrocarbon levels in sediment samples from these stations varied according to the methods of analysis (petrogenic vs total), the method of reporting (wet vs dry), and the time period during which the samples were taken (cruises 1-6).

It is evident from studying Table 6, that the 2 methods of analysis (petrogenic vs total) yielded conflicting results.

Samples taken during cruise 3 and measured for petrogenic hydrocarbons were divided into two significantly different groups with the other samples overlapping. In contrast, there was no significant difference between any of the samples as measured for total hydrocarbons.

Samples collected during cruise 4 and measured for petrogenic hydrocarbons were not significantly different with the exception of the samples collected at B-5 which differed from all other samples. The analysis of these samples for total hydrocarbons yielded three significant groups of samples with very little overlap.

The comparison of the cruise 5 samples measured for petrogenic

hydrocarbons yielded no significant differences, while two distinct groups resulted from the comparison of these samples as measured for total hydrocarbons on a wet basis and three distinct groups as measured on a dry basis. There were a number of samples which exhibited overlap in both cases.

For the samples taken during cruise 6, all methods of analysis yielded samples which were significantly different. However, the number of groups and subgroups were higher for total hydrocarbons than for petrogenic hydrocarbons.

Table 7 contains the results of a cruise by cruise comparison of the hydrocarbon levels present in the sediments collected at 15 stations along the Gulf of Mexico. It is evident from this table that the hydrocarbon input into the Gulf sediments varies from location to location. There was no significant differences between the sediment hydrocarbon levels from cruise to cruise at stations D-5 and C-2 at stations H-7, E-1, C-2, C-1, AS, A-2, and A-3 the hydrocarbon levels differed significantly during only one cruise, while at stations G-1, F-8, B-6, B-5, and A-1 they differed during two or more cruises.

The sample designations, the locations from which the samples were taken, and the chemical analysis data are given in Table 11 (Appendix B).

The statistical analyses given above clearly indicate that there are significant differences in the sediment hydrocarbon levels at the various stations along the Gulf as measured on the basis of petrogenic or total hydrocarbons and that these differences often vary from cruise to cruise. They also indicate that there are significant differences in the levels of hydrocarbons in the sediments at the the DWP sites. The complexity of the statistical tables generated by the various analyses makes it difficult to quickly identify significant trends. For this reason, attempts were made to display the raw data in a manner which would allow quick and accurate evaluation of the results.

The initial efforts at producing useful illustrations were not very successful due to the large variation in the numerical values of some of the samples. It was quickly realized that one or two unusually large numbers could completely skew the plots for a station causing the station

to appear to have a much higher level of hydrocarbons than it actually had based on all the samples. However, a discussion of these significant differences on a point by point basis tends to obscure the relationship between stations and DWP sites during each cruise and on a cruise to cruise basis. Because of this, it was decided that the raw data would be displayed by some method which would allow an observer to quickly evluate the data and easily identify any significant trends and/or relationships.

It was decided that the data would be averaged and plotted at the appropriate longitude and latitude via the computer. It was evident immediately that the closeness of the plots required that the number to be plotted had to be a single digit.

The first problem was addressed by assigning a numerical value of 1-5 each of five ranges which were believed, based on experience, to approximate none, light, moderate, heavy, and very heavy levels of hydrocarbons.

The solution to the second problem was not as readily apparent. Therefore, the numbers 1-5 which were to be plotted were arrived at by three different methods. In the first method, the values for the hydrocarbon levels of the samples from a given site were averaged and the appropriate number representing the range in which the average value fell was then plotted, (i.e. 125 would receive a 3 because it fell in the 101-200 range). In the second method, the value obtained for each sample from a station was assigned a number (1-5) representing its appropriate range. The ranked numbers were then averaged and this average, rounded to the nearest whole digit, was plotted. In the third method, the logarithims of the values from each sediment sample from a given station were averaged and this average logarithm was then ranked from 1-5 and plotted. Obviously, the antilogarithm of the average does not yield the numerbial average of the data.

The results obtained by the three methods of graphically displaying the data obtained from the analysis of sediment samples from the stations in the vicinity of each of the three DWP sites are given in Figures 2-10 (Appendix A).

The graphic display of the data obtained from the analyses of sediment

samples obtained from stations along the Gulf from Galveston, Texas, to Pascagoula, Mississippi, during six cruises (as measured for both petrogenic and total hydrocarbons and reported on a dry and wet weight basis) are given in Figures 11-22. (Appendix A).

DISCUSSION

The objectives of this study were (1) To compare the relative sediment hydrocarbon levels at the three DWP sites (stations H-6, B-6, and A-2), (2) To determine if there are consistant identifiable patterns in the immediate vicinity of the three DWP sites, (3) To determine if it is feasible to look for a control site in the general vicinity of the DWP sites, (4) To evaluate the relative distribution of sediment hydrocarbons at stations between the DWP sites, (5) To determine if the levels of hydrocarbons present in the sediments from the stations along the Gulf vary from cruise to cruise, (6) To determine if there is a significant difference between the petrogenic hydrocarbon content and the total hydrocarbon content, and (7) To determine if there is a significant difference between the use of wet and dry weight as a method of reporting hydrocarbon levels.

The three DWP sites (stations H-6, B-6, and A-2) did not differ significantly in the hydrocarbon content of their sediments except for site 2 (B-6) which was higher during cruises 1 and 2 (for petrogenic hydrocarbons) and site 1 (H-6) which was higher during cruise 5 (for total hydrocarbons) (Table 1). The fact that these differences occurred at different sites during different cruises suggests that the sites probably are not subjected to the same sources of hydrocarbon input.

The comparisons of the sediment hydrocarbon levels present at sampling locations in the immediate vicinity of each DWP site (Table 2-4) indicated that there were significant differences in the levels present and that these differences changed according to the type of hydrocarbon determined (petrogenic vs total) and the time of year (cruise). When these differences were plotted at their appropriate longtitude and latitude no clear pattern of distribution was evident. Therefore, a figure illustrating these data is not included. However, the patterns of distribution suggest that with a more systematically designed sampling program, patterns of distribution which reflect local currents and/or sources of input could probably be identified.

The sediment hydrocarbon analyses from stations on either side of each of the three DWP sites failed to identify sites which were like the respective DWP sites during all of the cruises as measured using either petrogenic or total hydrocarbons (Table 5). It is apparent that the stations chosen for study near DWP site 1 are much more similar to it than are similar stations around DWP sites 2 and 3. Nevertheless, it is highly probable that adequate control locations could be identified at each DWP site with a properly designed program based on the findings to date.

The comparisons of the sediment hydrocarbon levels at all stations other than the DWP sites (Table 6) indicated that there were significant differences in the levels present and that these differences changed according to whether petrogenic or total hydrocarbon data were employed and the cruise (time) during which the samples were taken. For example, there were no significant differences in the total sediment hydrocarbon levels at any of the stations during cruise 3 while there were several stations with significantly higher petrogenic levels. The results obtained for the cruise 5 samples were reversed. The use of total hydrocarbon data produced much more variation and significant difference than did the use of petrogenic hydrocarbon data.

The cruise-to-cruise differences in the sediment hydrocarbon levels at the sampling stations along the Gulf are given in Table 7. As inidcated in this table, the levels were relatively stable at the majority of the stations, especially the petrogenic hydrocarbon levels. Most of the samples which were significantly higher were collected during cruise 3 or cruise 5. The highest degree of cruise-to-cruise variation in hydrocarbon levels occurred at stations B-5 and B-6.

It is apparent from examining Table 8 that there are significant differences in the petrogenic hydrocarbon levels and the total hydrocarbon levels. It is also apparent that these differences vary from cruise to cruise.

An examination of the ratio of one to the other $\left(\frac{\text{total hydrocarbons}}{\text{petrogenic hydrocarbons}}\right)$ would provide an estimate of the degree of input from each source (Table 9). A value of less than 1.0 would suggest that the hydrocarbons were predominately of petroleum origin. A value greater than 1.0 would sug-

gest that the hydrocarbons were predominately of biogenic origin, or from recent petroleum sources, or both. The larger the diferential on either side of 1.0, the more likely the interpretation will be correct.

It is obvious that the oil content on a dry weight basis will always be greater than the oil content on a wet weight basis and that for any individual sample, the ratio $\frac{\text{ng oil per gram dry weight of sediment}}{\text{ng oil per gram wet weight of sediment}}$ will be identical for both petrogenic and total hydrocarbon analyses since they were both performed on a single extract from a given sample. Of course, there is no moisture present in the sample the ratio would be 1.0.

The data in Table 10 clearly indicate that the water content of the sediments from DWP 1 and DWP 3 are similar and did not vary appreciably from cruise to cruise. The samples from DWP 2 showed considerable variation from cruise to cruise and on occasion were notably different from the samples taken from DWP 1 and DWP 3.

The graphic displays produced using three methods of arriving at the numbers to be plotted allow a quick evaluation of the relative sediment hydrocarbon levels present at the various locations along the Gulf Coast (Figures 2-22). It is not yet clear, however, which of the three methods most accurately represents the levels of hydrocarbons at the sampling stations.

The averaaged and ranked method produces the most sites with a maximum value of five and the widest variation in values as indicated by more 3s and 4s. This suggests that a few very high numbers have too great an influence, possible yielding plots which indicate a higher relative level of hydrocarbons than is actually present in the area. The ranked and the averaged method produces the most 2s and the least 5s while averaging the logarithms of the values was intermediate.

While there is little question that the graphic displays are very valuable, further studies will have to be undertaken to determine which of the 3 methods most accurately represents the actual sediment hydrocarbon levels at a given site and which method is least influenced by outside factors.

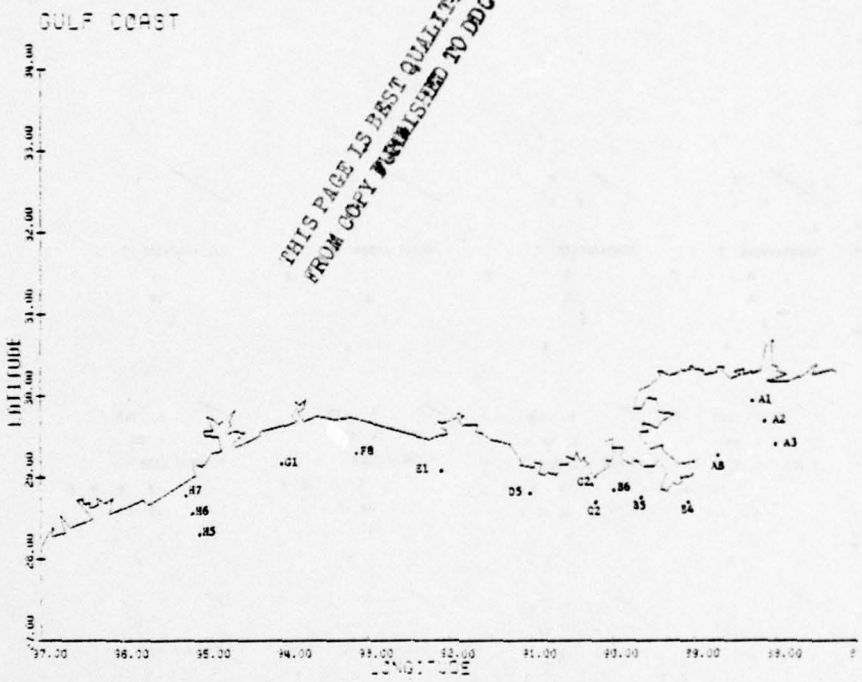

Figure 1. Graphic display of the primary sampling stations located along the Gulf of Mexico from Galveston, Texas, to Mobile, Alabama.

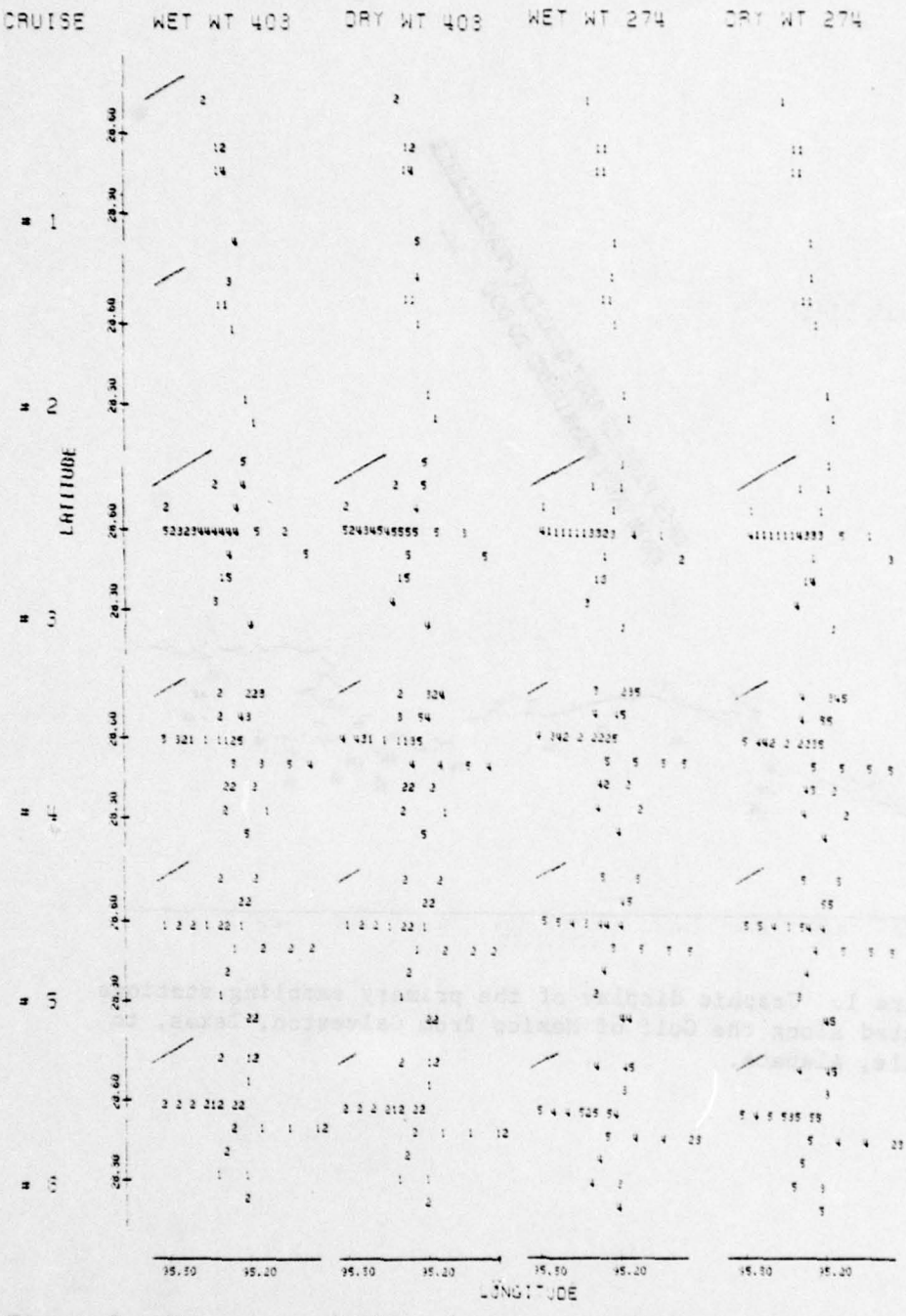

Figure 2. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 1. Plotted numbers (1-5) were obtained by averaging all the data from a station and assigning a ranking to that averaged value. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

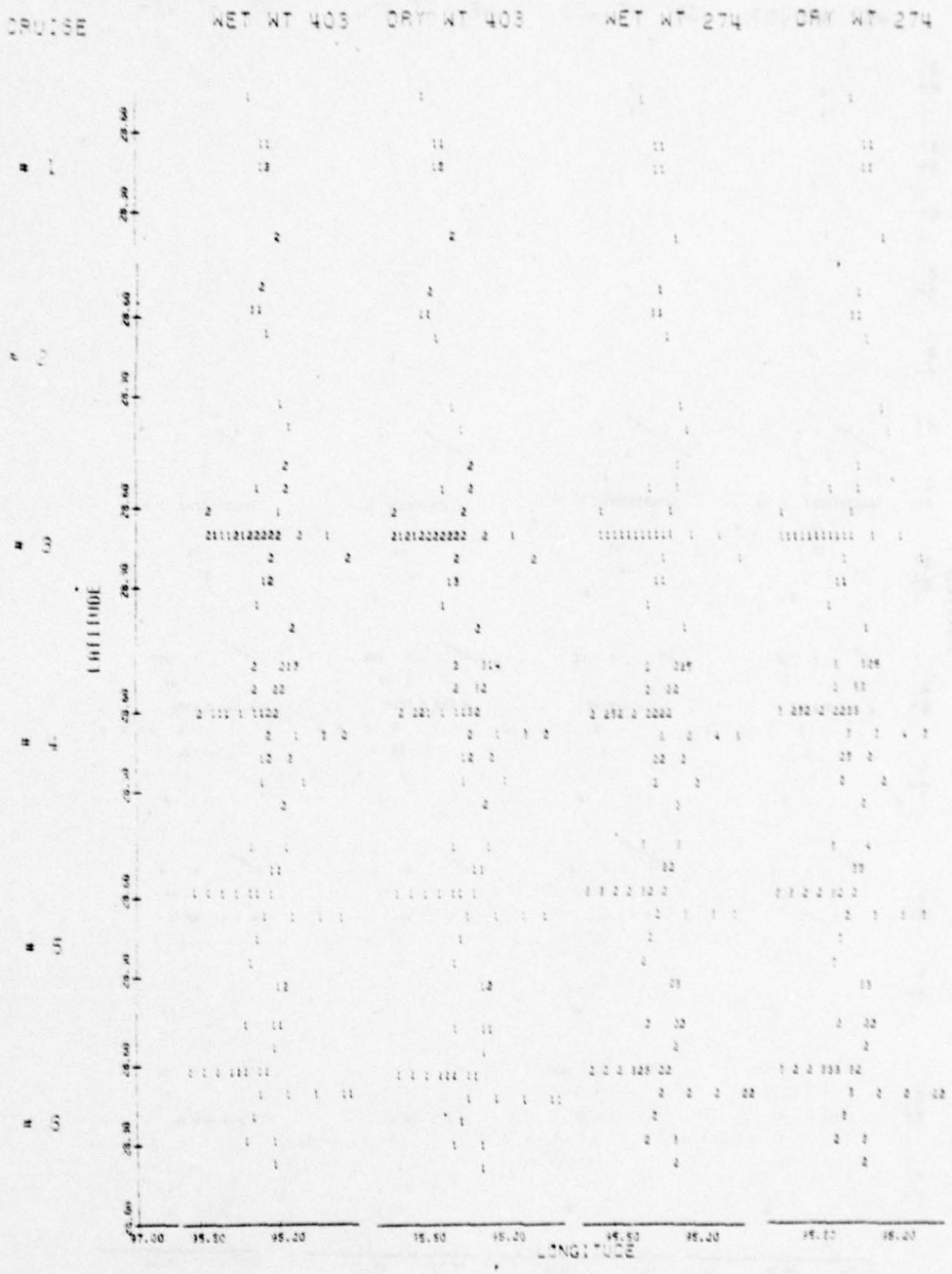

Figure 3. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 1. Plotted numbers (1-5) were obtained by assigning a ranking to each data point and then averaging the ranked numbers from the same sites. This ranked average (1-5) was then plotted. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

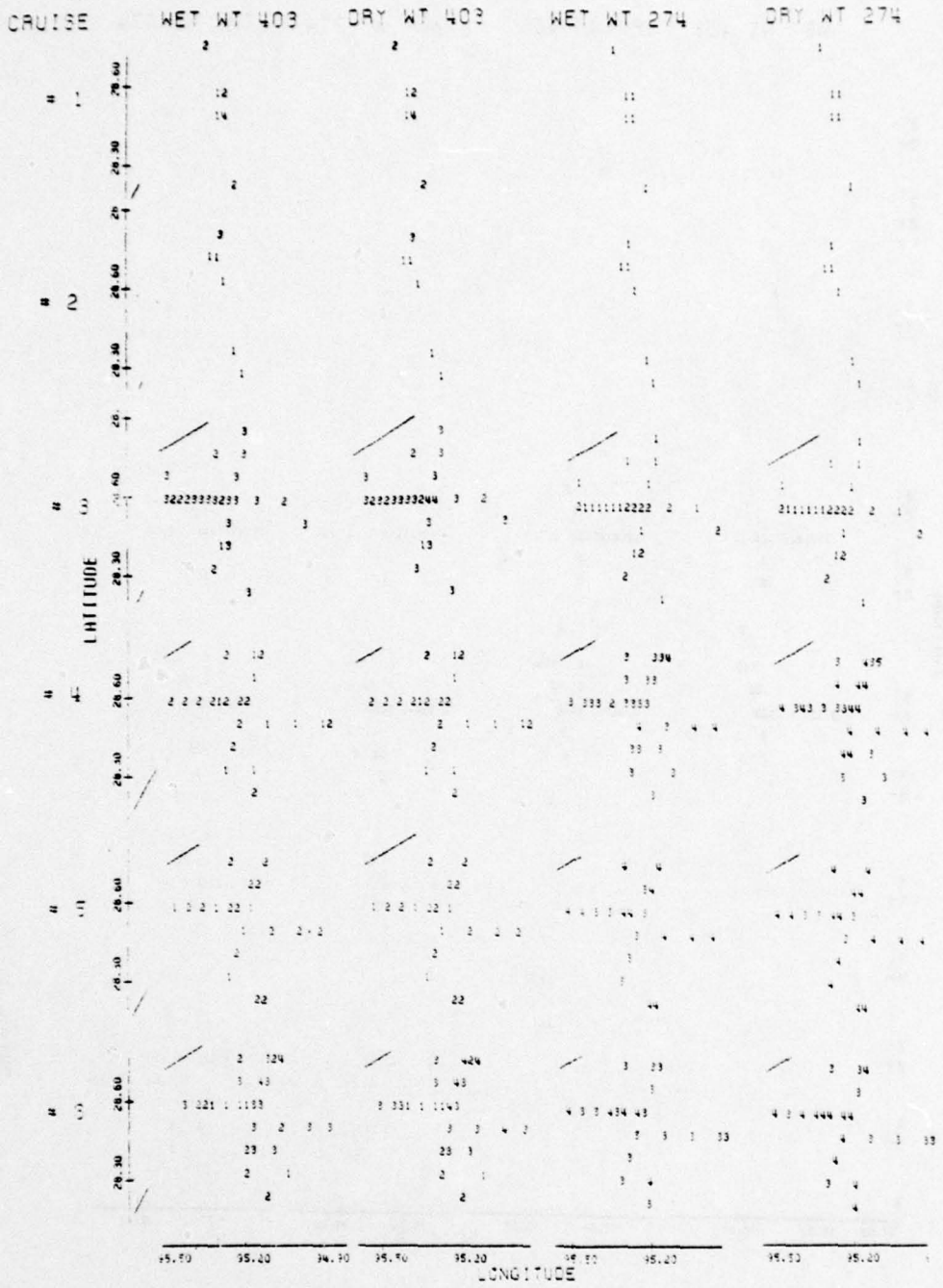

Figure 4. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 1. Plotted numbers (1-5) are catagorized according to the average of the logarithms of the oil concentrations. Legend: 1=0.00; 2=0.001-2.000; 3=2.004-2.301; 4=2.303-2.698; 5=> 2.699.

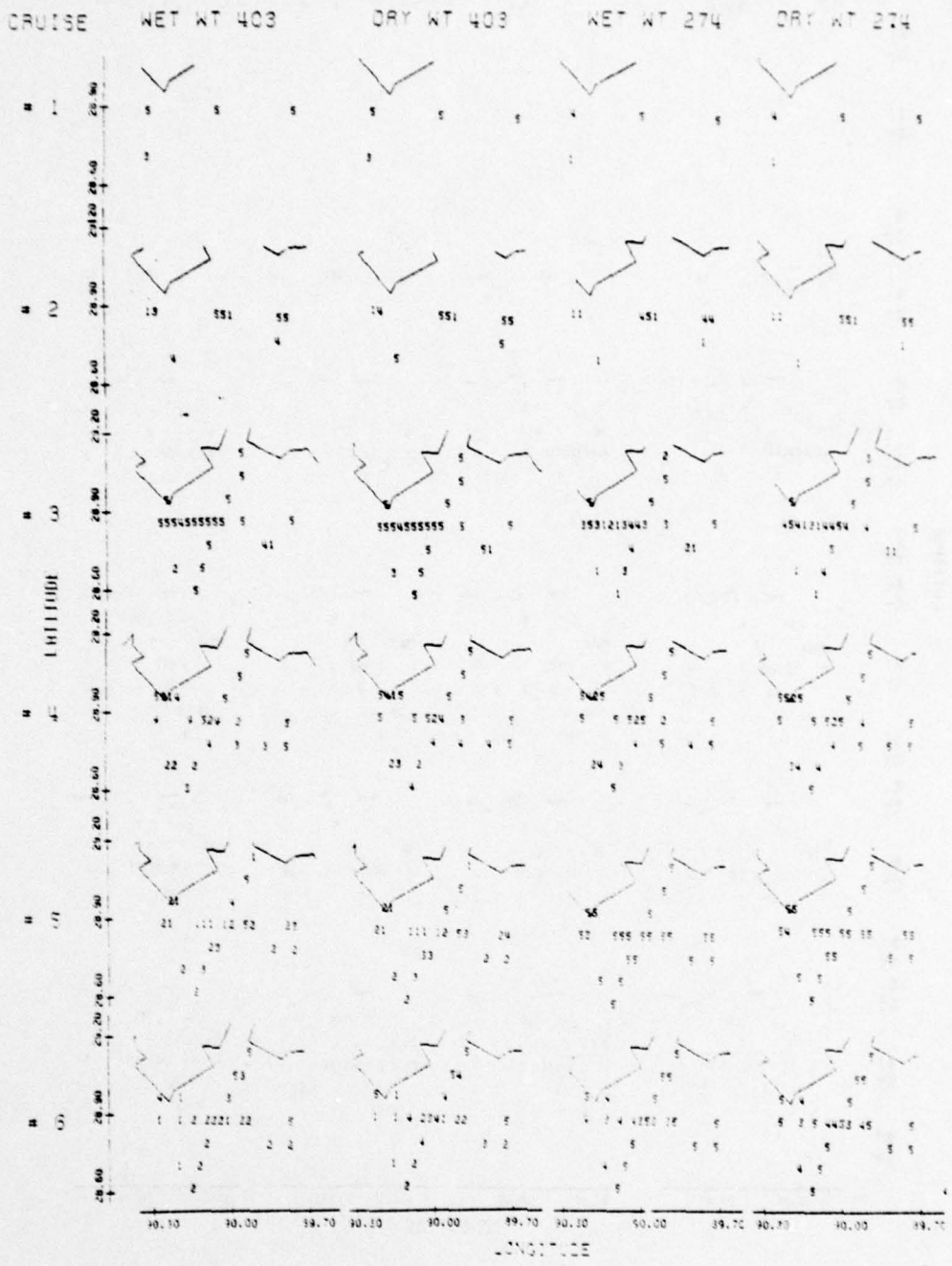

Figure 5. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 2. Plotted numbers (1-5) were obtained by averaging all the data from a station and assigning a ranking to that averaged value. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

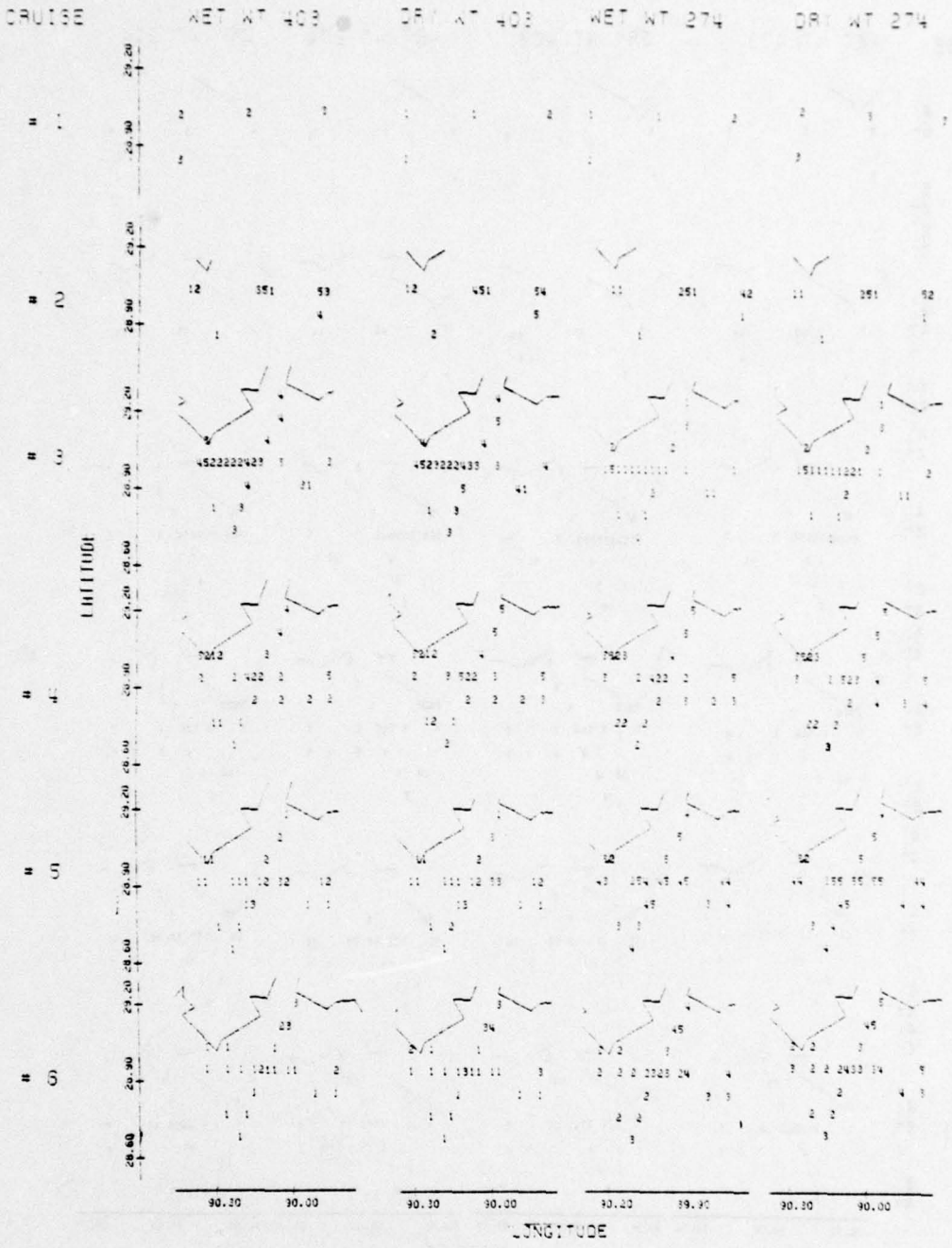

Figure 6. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 2. Plotted numbers (1-5) were obtained by assigning a ranking to each data point and then avaregaing the ranked numbers from the same sites. This ranked average (1-5) was then plotted. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

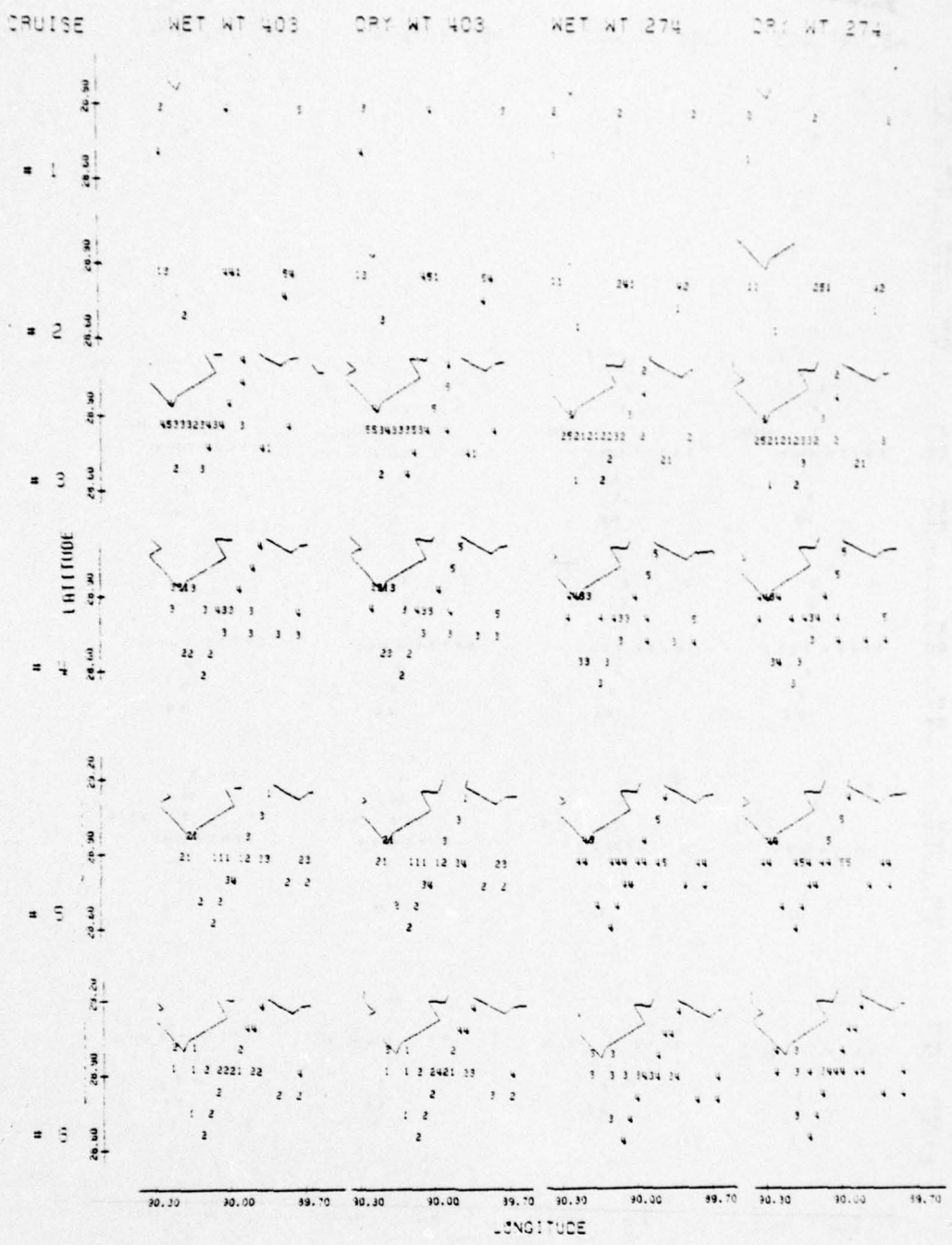

Figure 7. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 2. Plotted numbers (1-5) are catagorized according to the average of the logarithms of the oil concentrations. Legend: 1=0.00; 2=0.001-2.000; 3=2.004-2.301; 4=2.303-2.698; 5=> 2.699.

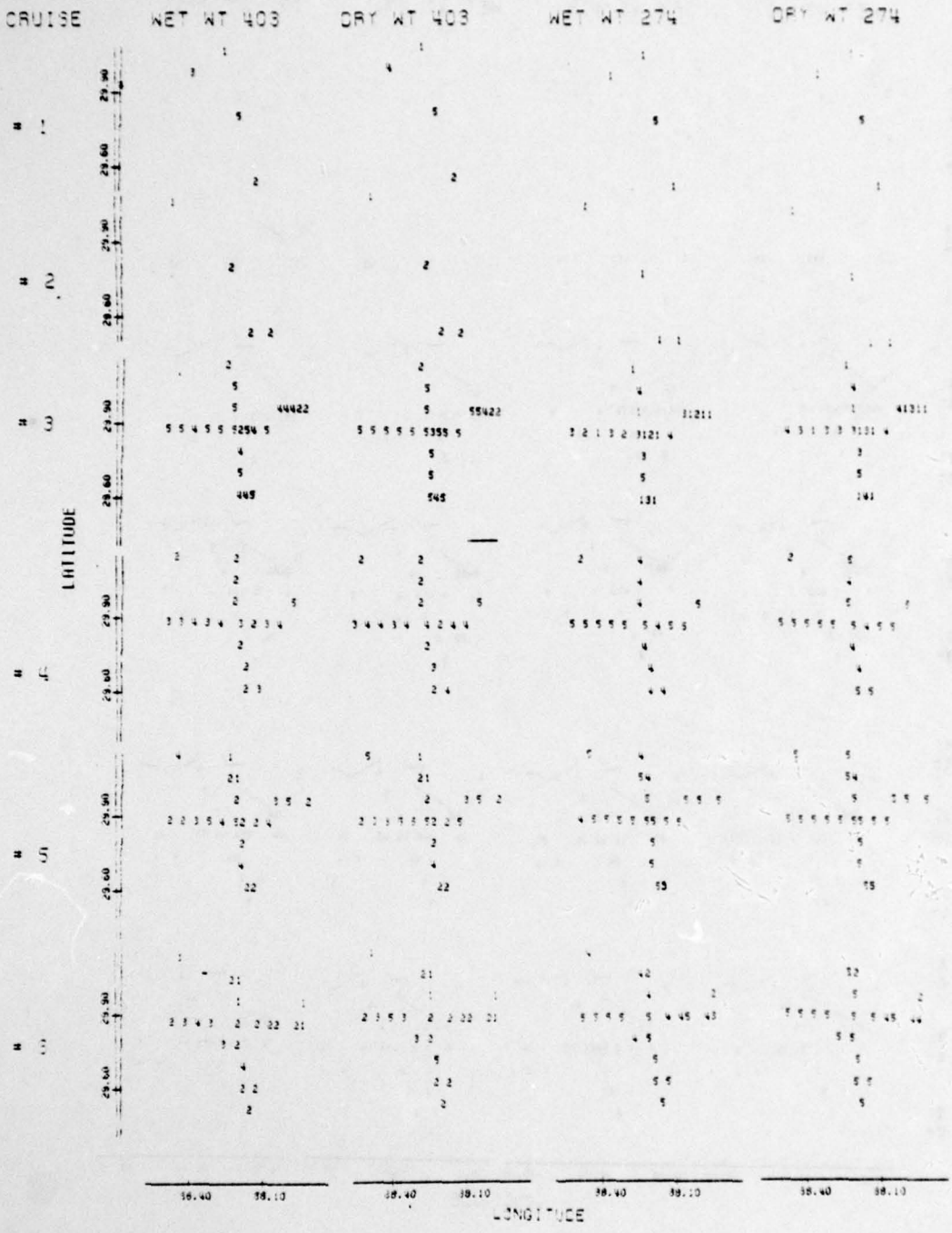

Figure 8. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 3. Plotted numbers (1-5) were obtained by averaging all the data from a station and assigning a ranking to that averaged value. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

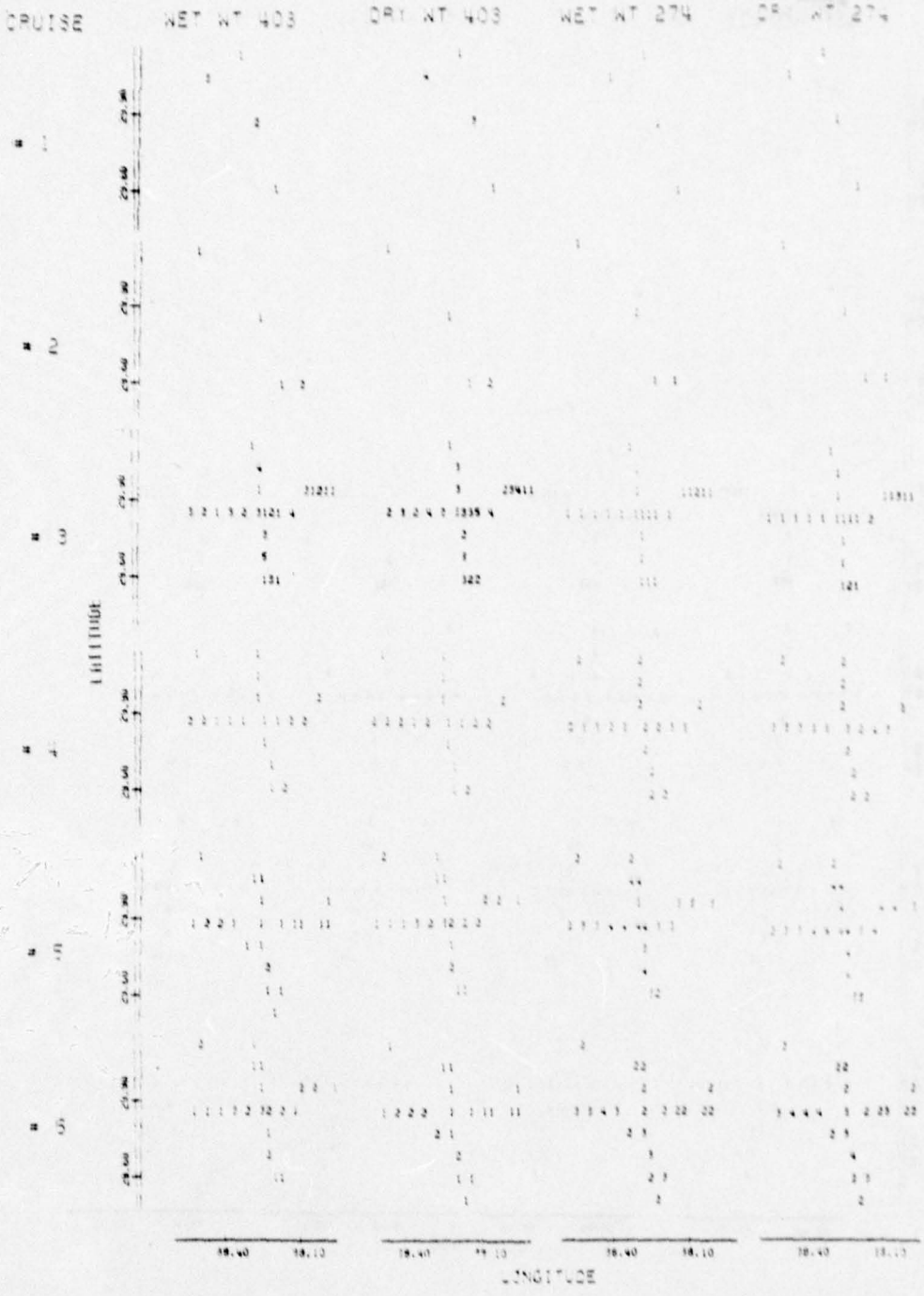

Figure 9. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 3. Plotted numbers (1-5) were obtained by assigning a ranking to each data point and then averaging the ranked numbers from the same sites. This ranked average (1-5) was then plotted. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

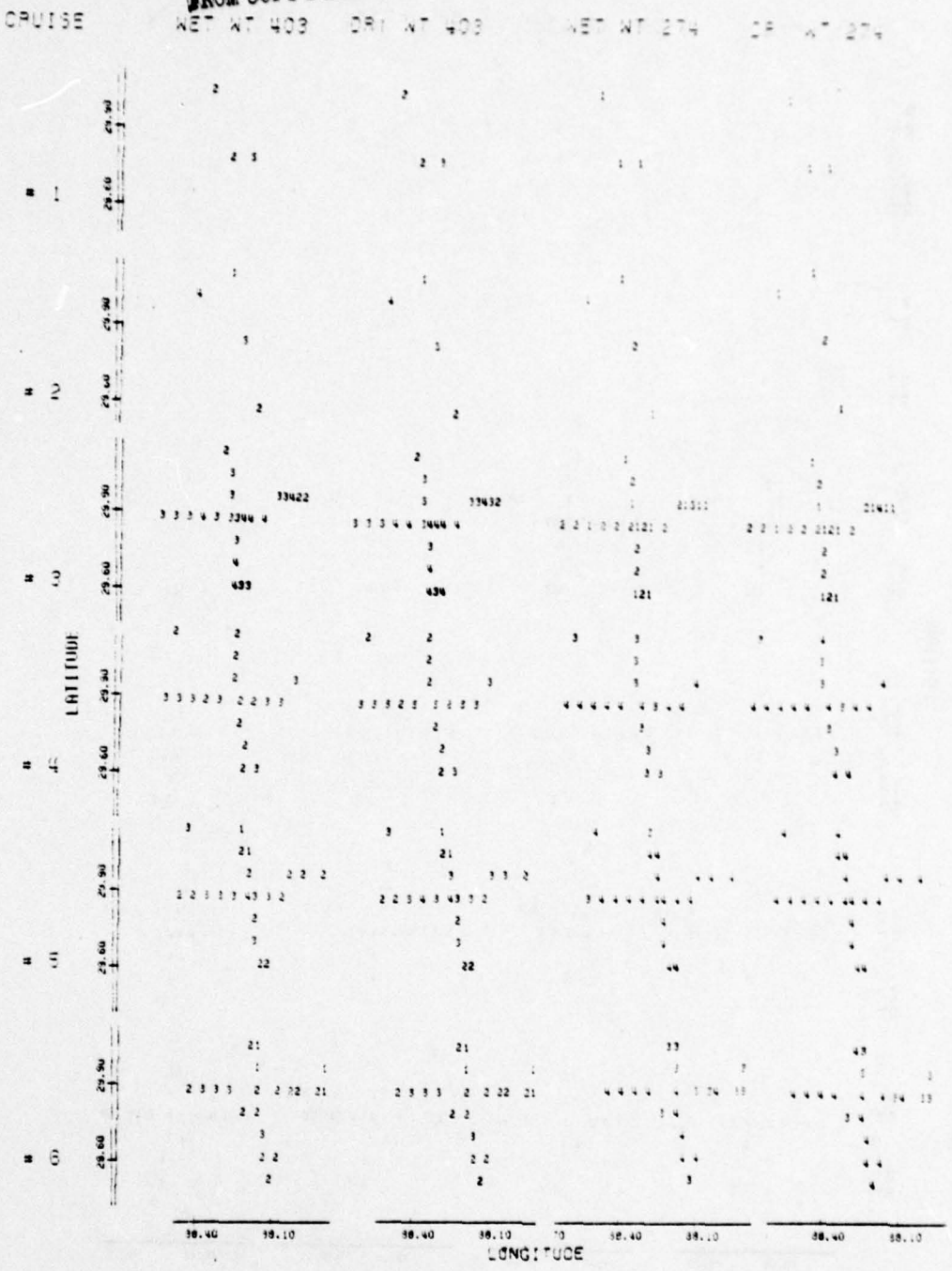

Figure 10. Nanagrams of biogenic and petrogenic hydrocarbons per gram dry and wet weight of sediments obtain in the vicinity of DWP site 3. Plotted numbers (1-5) are catagorized according to the average of the logarithms of the oil concentrations. Legend: 1=0.00; 2=0.001-2.000; 3=2.004-2.301; 4=2.303-2.698; 5= > 2.699.

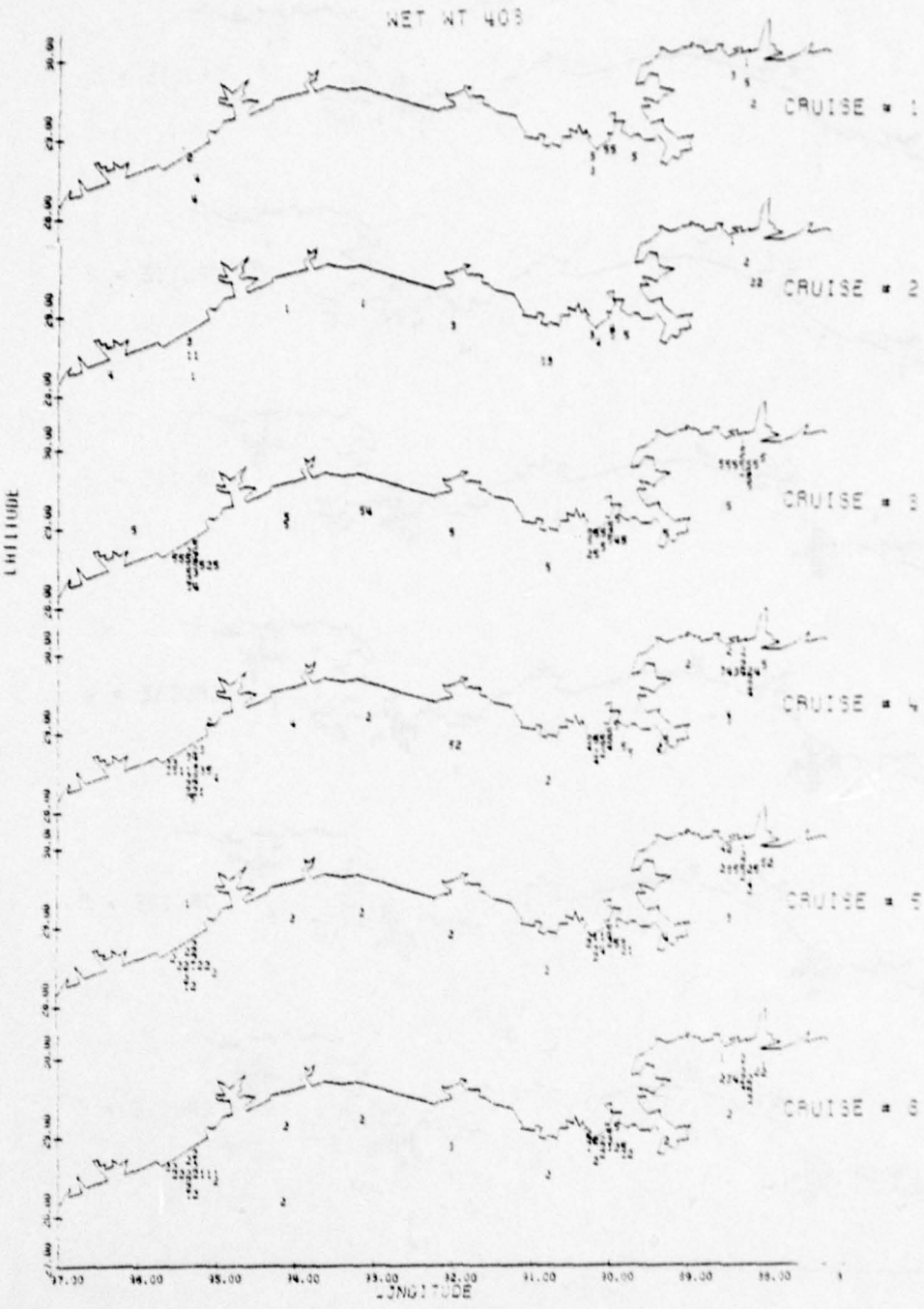

Figure 11. Nanagrams of petrogenic hydrocarbons per gram wet weight of sediment. Plotted numbers were obtained by averaging all the data from a station and assigning a ranking (1-5) to that averaged value. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

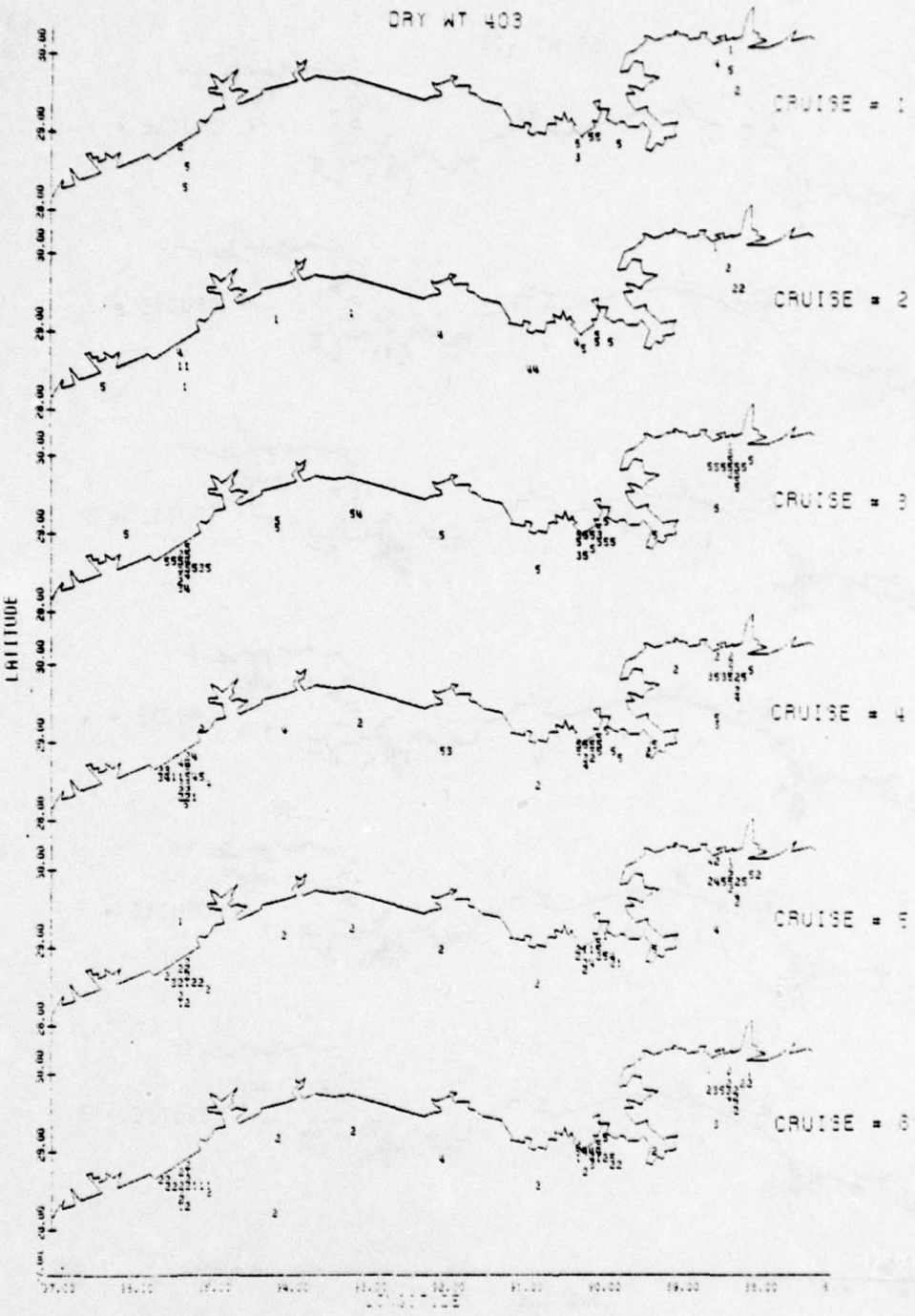

Figure 12. Nanagrams of petrogenic hydrocarbons per gram dry weight of sediment. Plotted numbers were obtained by averaging all the data from a station and assigning a ranking (1-5) to that averaged value. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

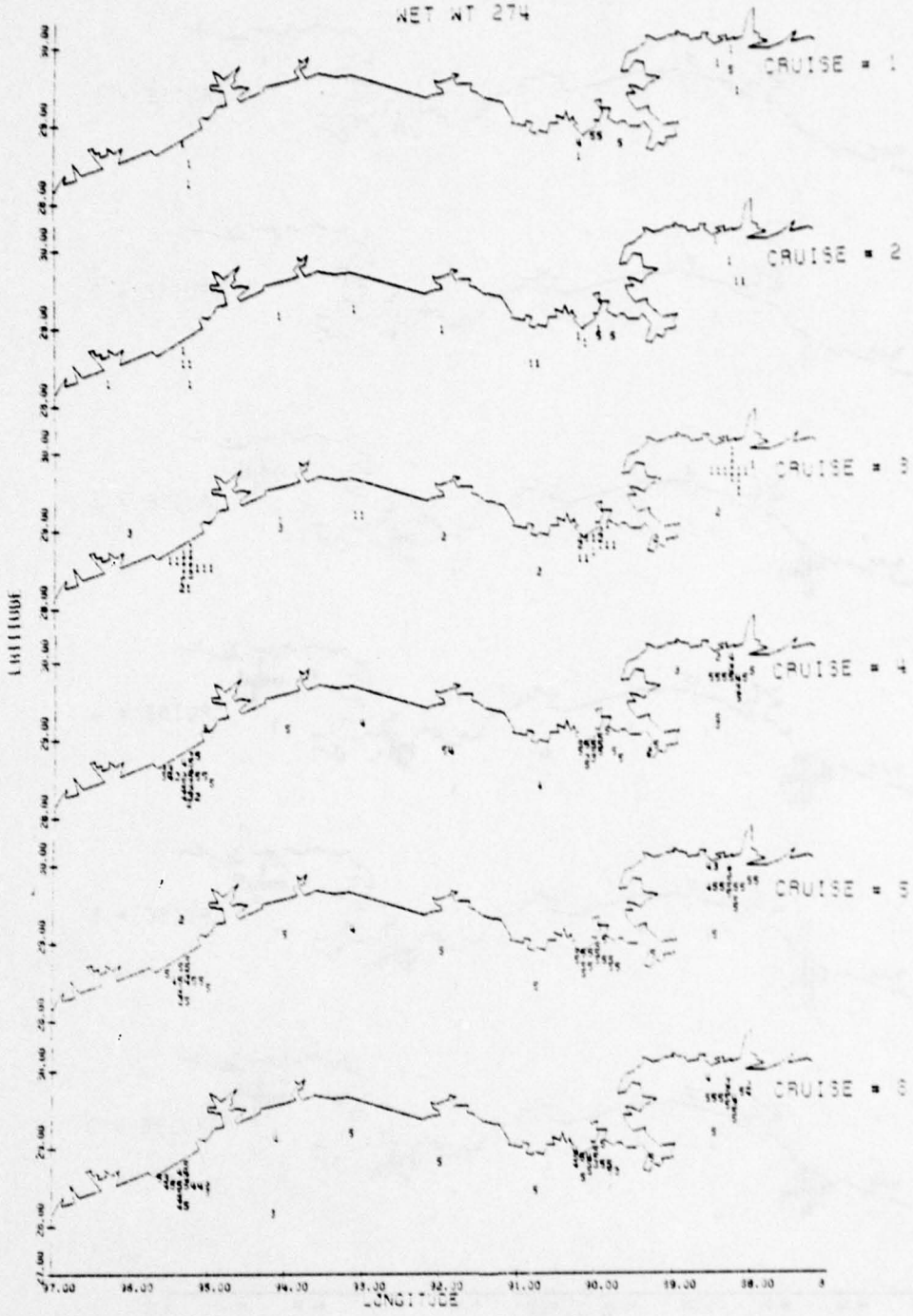

Figure 13. Nanagrams of biogenic hydrocarbons per gram wet weight of sediment. Plotted numbers were obtained by averaging all the data from a station and assigning a ranking (1-5) to that averaged value. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

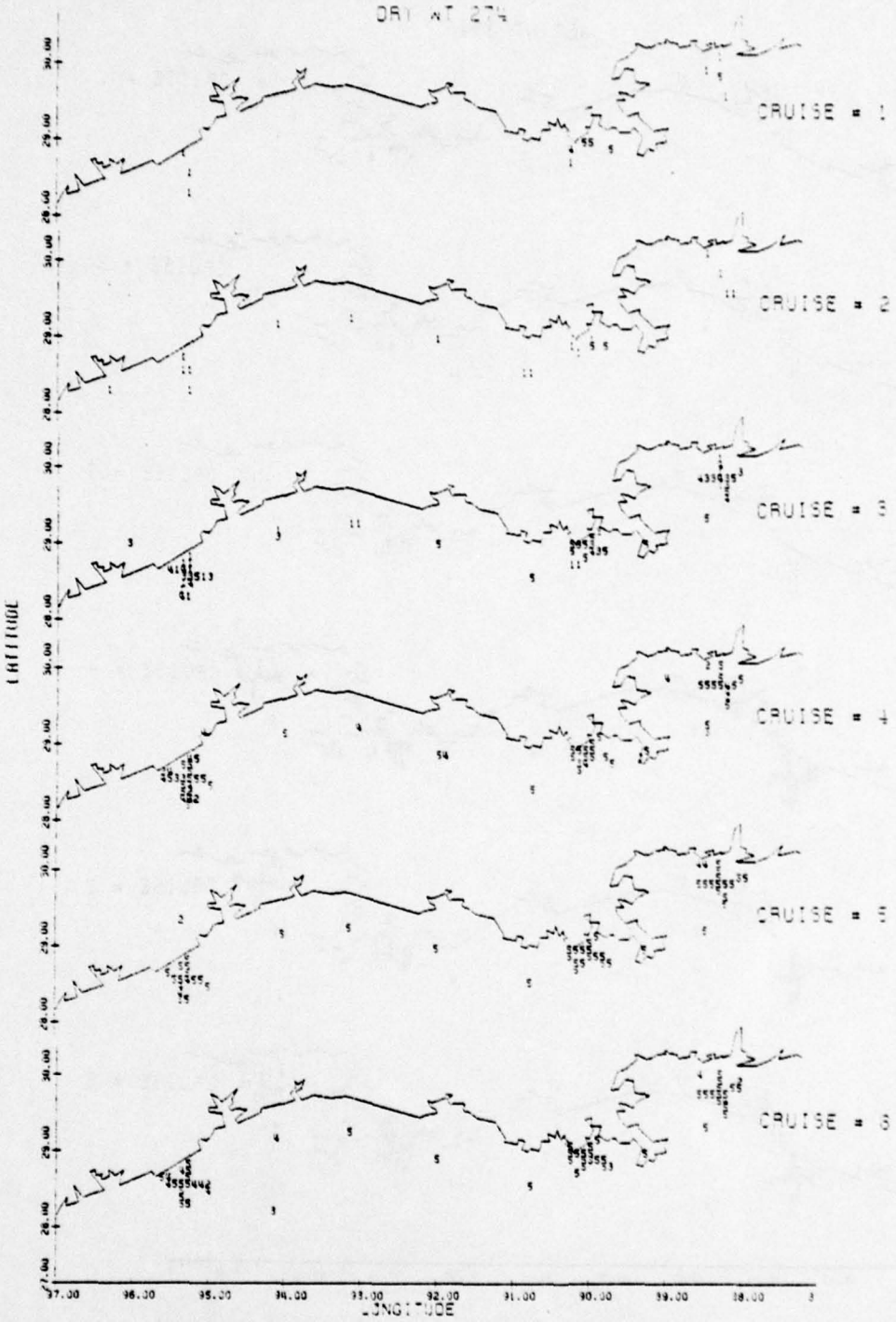

Figure 14. Nanagrams of biogenic hydrocarbons per gram dry weight of sediment. Plotted numbers were obtained by averaging all the data from a station and assigning a ranking (1-5) to that averaged value. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

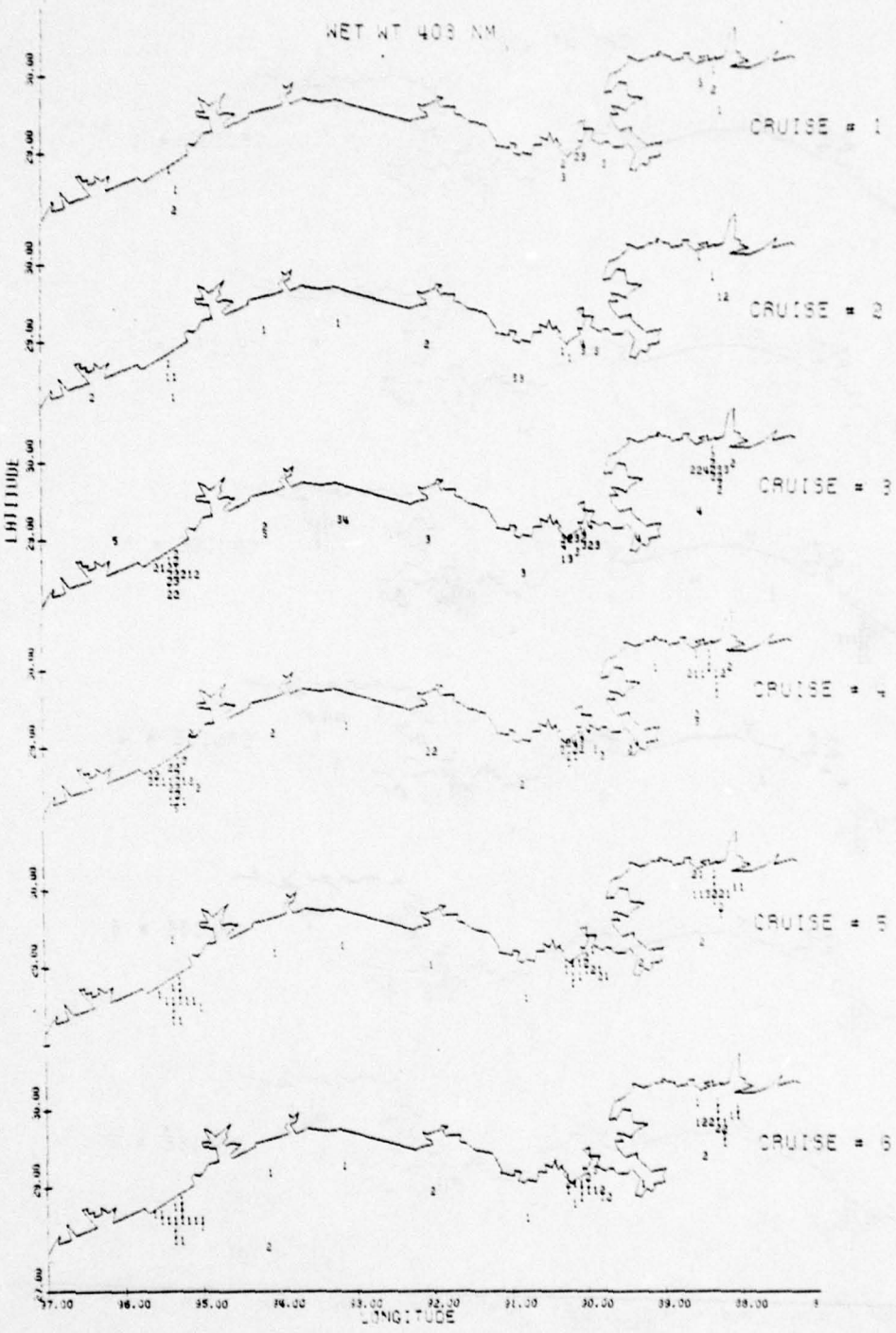

Figure 15. Nanagrams of petrogenic hydrocarbons per gram wet weight of sediment. Plotted numbers were obtained by assigning a ranking (1-5) to each data point and averaging the ranked numbers from the same areas. This ranked averages (1-5) then plotted. Legend: 1=0; 2-1-100; 3-101-200; 4=201-500; 5=501-9999.

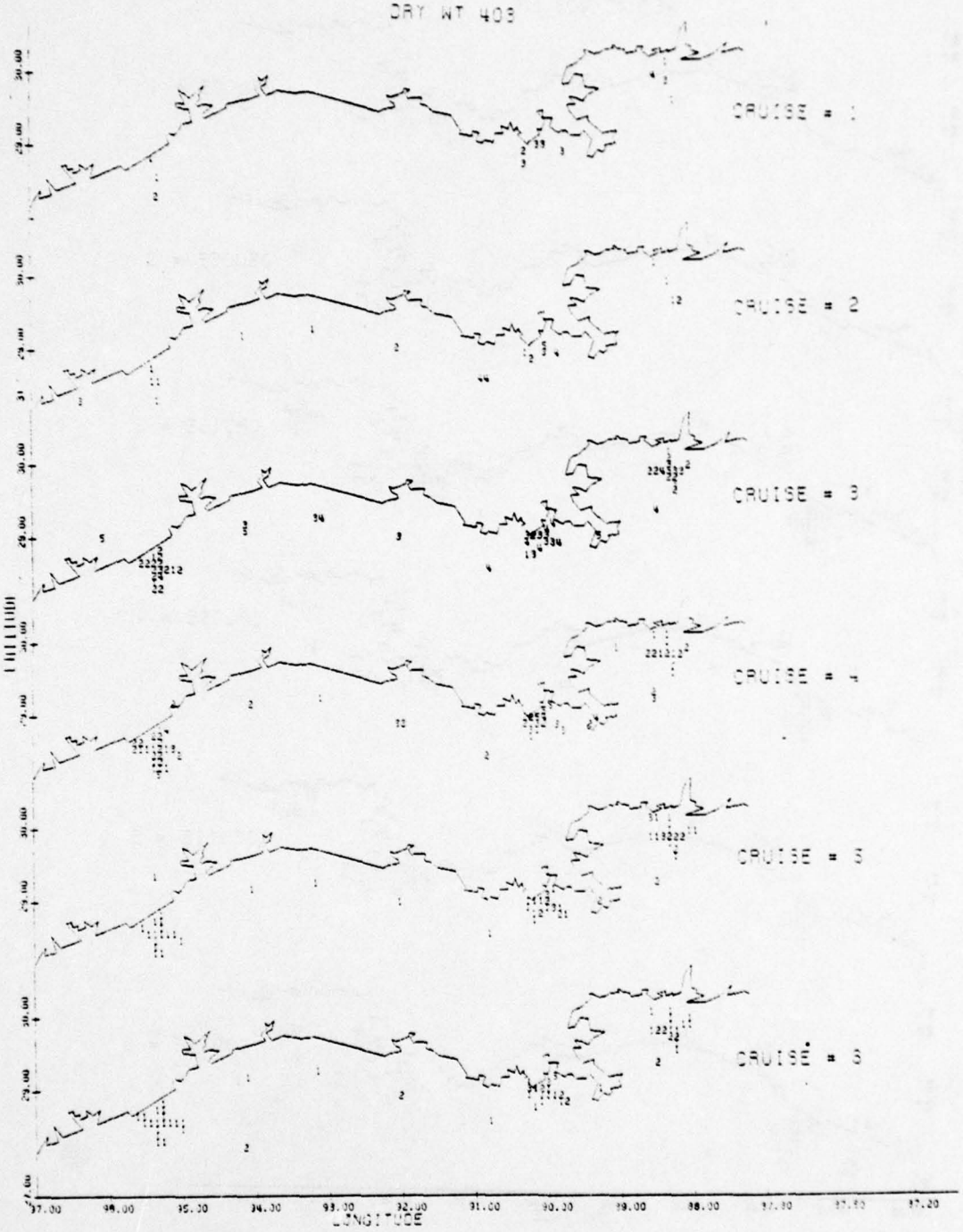

Figure 16. Nanagrmas of petrogenic hydrocarbons per gram dry weight of sediment. Plotted numbers were obtained by assigning a ranking (1-5) to each data point and averaging the ranked numbers (1-5) then plotted. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

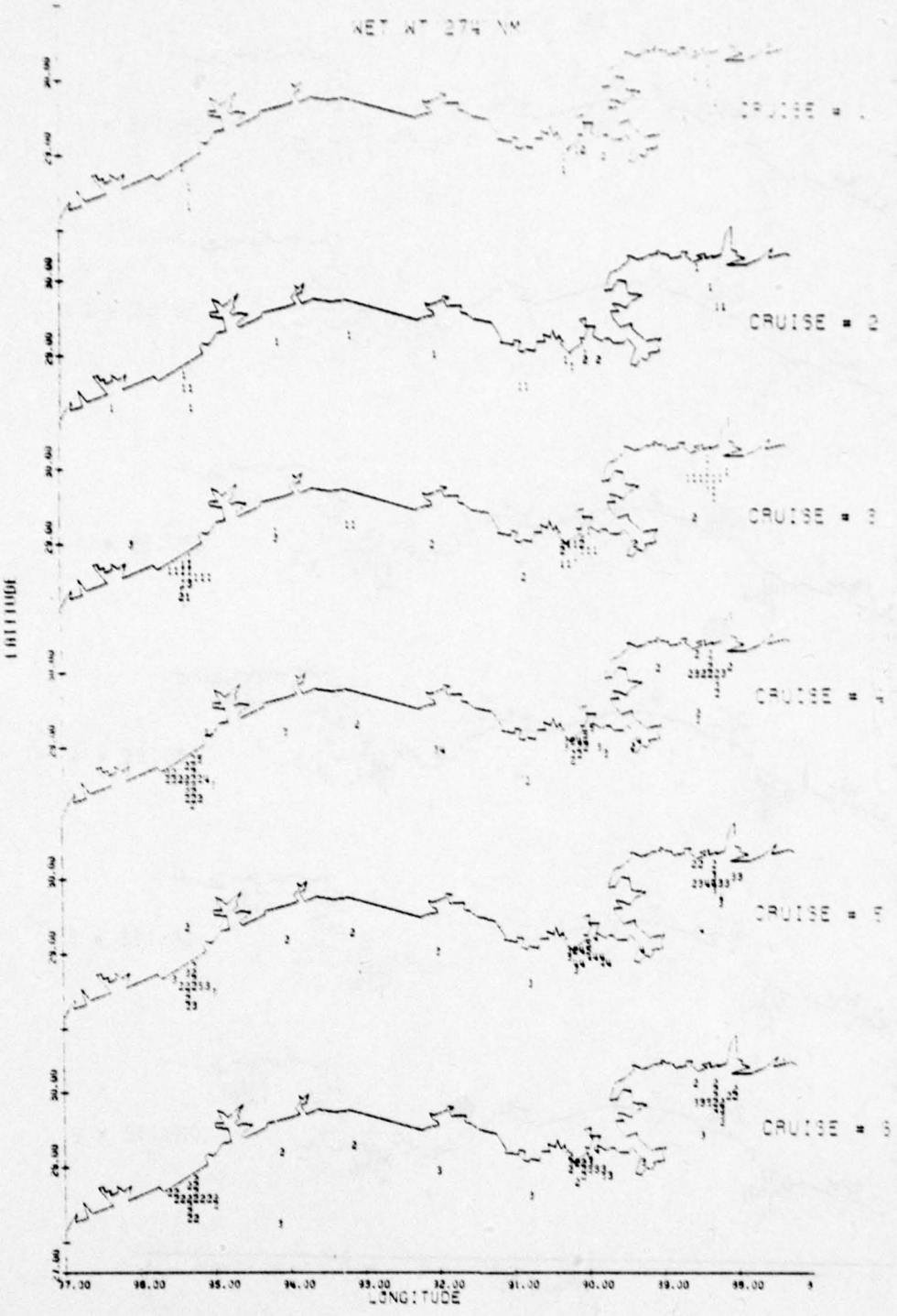

Figure 17. Nanagrams of biogenic hydrocarbons per gram wet weight of sediment. Plotted numbers were obtained by assigning a ranking (1-5) to each data point and averaging the ranked numbers from the same areas. This ranked averages (1-5) then plotted. Legend: 1= 0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

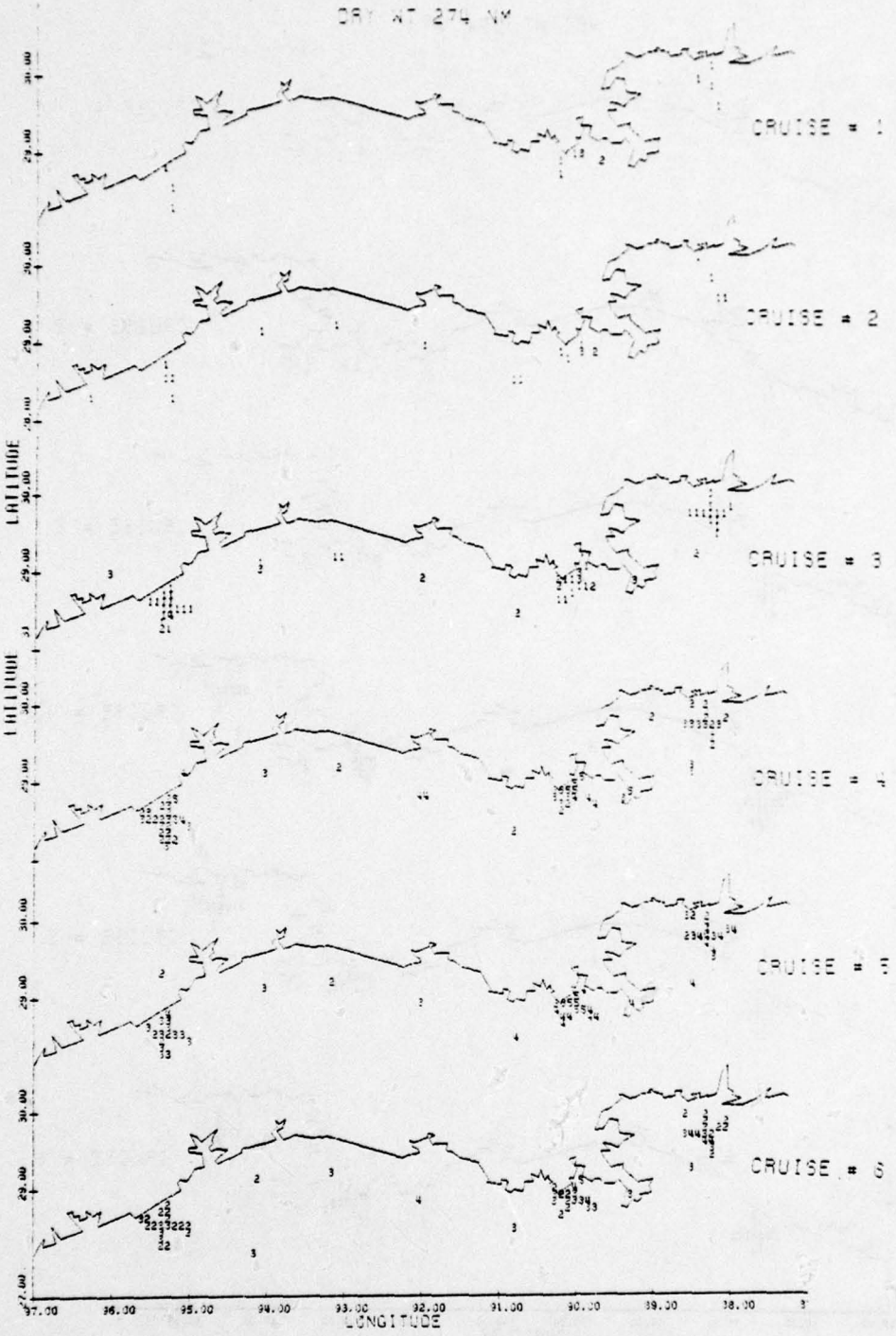

Figure 18. Nanagrams of biogenic hydrocarbons per gram dry weight of sediment. Plotted numbers were obtained by assigning a ranking (1-5) to each data point and averaging the ranked numbers from the same areas. This ranked averages (1-5) then plotted. Legend: 1=0; 2=1-100; 3=101-200; 4=201-500; 5=501-9999.

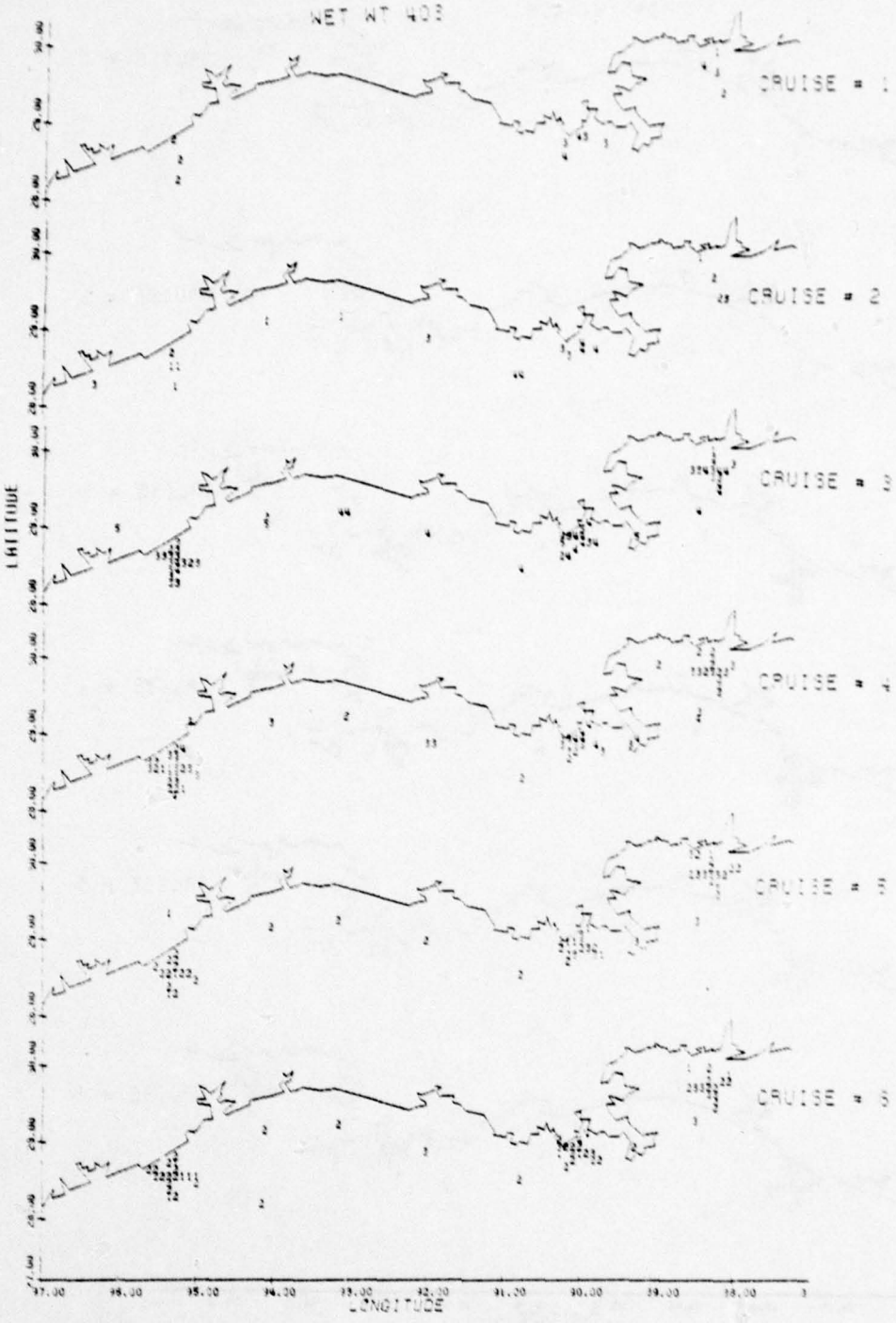

Figure 19. Nanagrams of petrogenic hydrocarbons per gram wet weight of sediment. Plotted numbers (1-5) are catagorized according to the average of the logarithms of the oil concentrations. Legend: 1=0.00; 2=0.001-2.000; 3=2.004-2.301; 4=2.303-2.698; 5= 2.699.

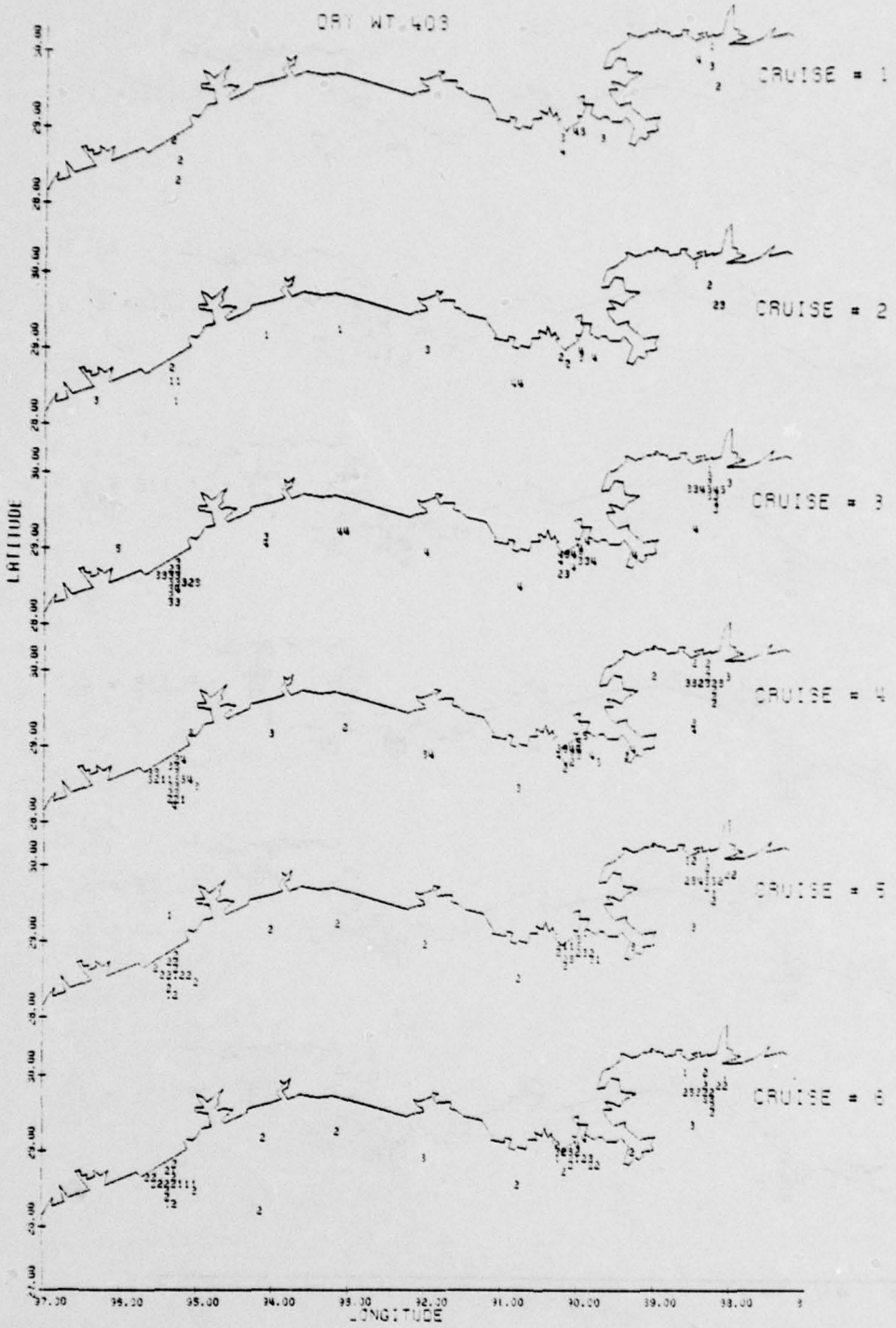

Figure 20. Nanagrams of petrogenic hydrocarbons per gram dry weight of sediment. Plotted numbers (1-5) are catagorized according to the average of the logarithms of the oil concentrations. Legend: 1=0.00; 2=0.001-2.000; 3=2.004-2.301; 4=2.303-2.698; 5=> 2.699.

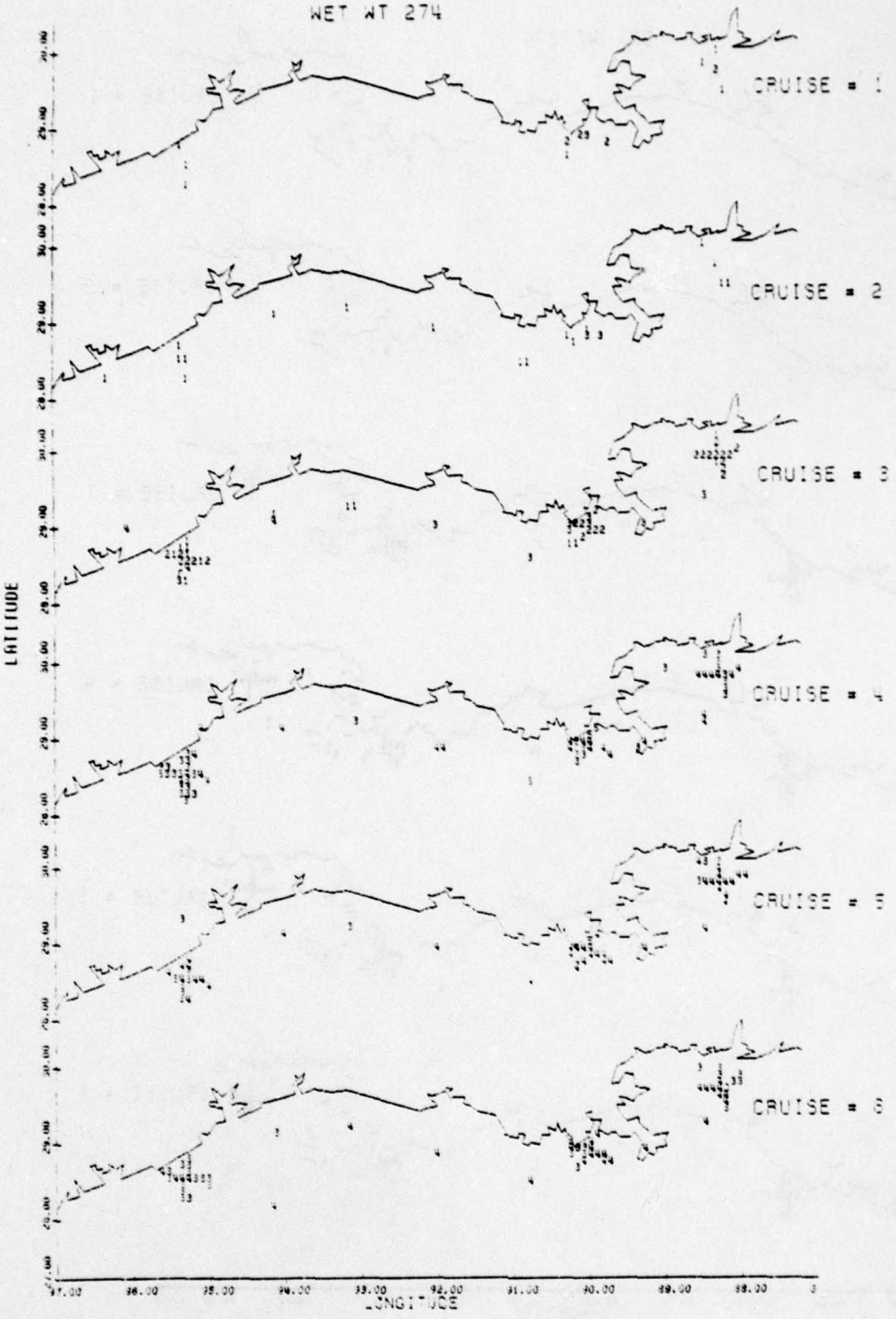

Figure 21. Nanagrams of biogenic hydrocarbons per gram wet weight of sediment. Plotted numbers (1-5) are catagorized according to the average of the logarithms of the oil concentrations. Legend: 1=0.00; 2=0.001-2.000; 3=2.004-2.301; 4=2.303-2.698; 5=>2.699.

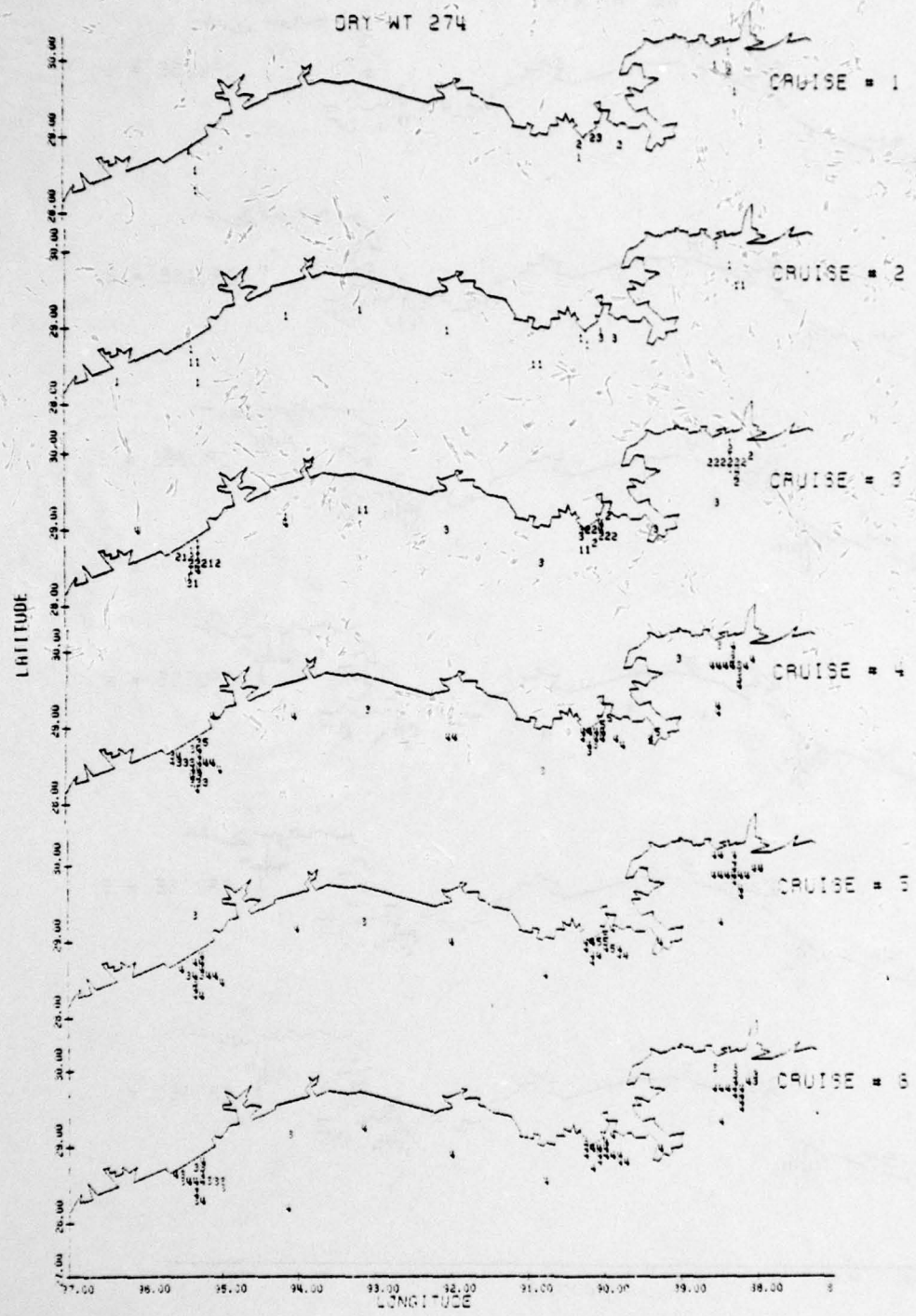

Figure 22. Nanagrams of biogenic hydrocarbons per gram dry weight of sediment. Plotted numbers (1-5) are catagorized according to the average of the logarithms of the oil concentrations. Legend: 1=0.00; 2=0.001-2.000; 3=2.004-2.301; 4=2.303-2.698; 5=> 2.699.

Table 1. A statistical comparison of sediment hydrocarbon levels of samples obtained from each deep water port site (1-3) during each cruise (1-6). Measurements were made at 403 and 274 and were reported on a wet and dry basis. Those sites not having common letters differ significantly at the .05% level. Comparisons must be made across the table not down.

	Cruise 1 sites			Cruise 2 sites			Cruise 3 sites			Cruise 4 sites			Cruise 5 sites			Cruise 6 sites		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Wet 403	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Dry 403	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Wet 274	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A
Dry 274	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A

Table 2. Statistical comparison of the sediment hydrocarbon levels of 14 stations in the immediate vicinity of Deep Water Port site 1 during each of 4 cruises. Measurements were made at 403 and 274 and reported on a wet and dry basis. Those sites not having common letters differ significantly at the .05% level. Comparisons must be made across the table, not down.

Cruise		Sites within DWP-1													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
3	Wet 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Wet 274	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 274	A	A	A	A	A	A	A	A	A	A	A	A	A	A
4	Wet 403	A	AB	AB	BC	A	A	A	AB	AB	AB	AB	AB	AB	C
	Dry 403	A	AB	AB	BC	A	A	A	A	AB	AB	AB	AB	AB	C
	Wet 274	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 274	A	A	A	A	A	A	A	A	A	A	A	A	A	A
5	Wet 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Wet 274	ABC	ABCD	A	AB	ABCD	A	AB	BCDE	DE	E	BCDE	ABCD	DE	CDE
	Dry 274	ABCD	ABCD EF	AB	ABC	ABCD EF	A	ABC	DEF	DEF	E	BCD EF	ABCD EF	E	EF
6	Wet 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Wet 274	ABC	ABC	BC	BC	C	C	ABC	ABC	C	BC	ABC	ABC	AB	AB
	Dry 274	ABCD	ABCD	BCD	BCD	D	BCD	ABCD	ABC	CD	ABCD	ABCD	ABCD	AB	AB

Table 3. Statistical comparison of the sediment hydrocarbon levels of 13 stations in the immediate vicinity of Deep Water Port site 2 during each of 4 cruises. Measurements were made at 403 and 274 and reported on a wet and dry basis. Those sites not having a common letter differ significantly at the .05% level. Comparisons must be made across the table, not down.

Cruise		Sites within DWP-2												
		1	2	3	4	5	6	7	8	9	10	11	12	13
3	Wet 403	A	A	AB	A	AB	A	A	A	AB	B	B	A	A
	Dry 403	AB	ABC	ABCD	AB	BCD	AB	A	ABC	ABCD	CD	D	ABC	AB
	Wet 274	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 274	A	A	A	A	A	A	A	A	A	A	A	A	A
4	Wet 403	A	A	A	A	A	A	A	A	B	B	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	B	B	A	A	A
	Wet 274	AB	A	AB	B	AB	AB	AB	C	C	B	AB	AB	AB
	Dry 274	AB	A	AB	B	AB	AB	AB	C	C	B	AB	AB	AB
5	Wet 403	A	A	AB	A	A	A	A	A	A	C	AB	BC	A
	Dry 403	A	A	AB	A	A	A	A	A	A	C	AB	BC	A
	Wet 274	A	A	AB	ABC	AB	A	A	A	BCD	D	CD	BCD	A
	Dry 274	AB	AB	ABCD	ABCDE	BCDE	AB	A	AB	CDE	E	DE	DE	AB
6	Wet 403	A	A	A	A	A	A	A	A	C	B	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	A	B	A	A	A
	Wet 274	AB	AB	AB	AB	A	AB	A	AB	C	C	AB	AB	B
	Dry 274	AB	A	A	A	A	A	A	AB	C	C	AB	AB	B

Table 4. Statistical comparison of the sediment hydrocarbon levels of 14 stations in the immediate vicinity of Deep Water Port site 3 during each of 4 cruises. Measurements were made at 403 and 274 and are reported on a dry and a wet basis. Those sites not followed by a common letter differ significantly at the .05% level. Comparisons must be made across the table, not down.

Cruise		Sites within DWP-3																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
3	Wet 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Wet 274	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 274	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
4	Wet 403	-*	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 403	-	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Wet 274	-	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 274	-	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
5	Wet 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Wet 274	ABC	ABC	ABCD	ABCD	A	ABC	ABC	ABCD	BCD	ABC	CD	CD	E	ABC	AB	A	D
	Dry 274	ABC	ABC	ABCD	ABCD	A	ABC	ABC	ABCD	BCD	ABC	BCD	BCDE	E	AB	AB	A	DE
6	Wet 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Wet 274	A	AB	A	A	A	A	A	A	A	ABC	BC	ABC	A	A	C	-	-
	Dry 274	A	AB	A	A	A	A	A	A	A	A	ABC	BC	AB	AB	C	-	-

-* indicates data missing

Table 5. A contrast between the sediment hydrocarbon levels present at each DWP site (1-3) and 2 stations on opposite sides of each station. Measurements made at 403 and 274 and reported on a dry and wet weight basis. Sites not having a common letter differ significantly at the .05% level. Comparisons must be made across the table, not down.

Cruise		DWP-1 VS	H-5	H-7	DWP-2 VS	C-1	B5	DWP-3 VS	A1	A3
1	Wet 403	A	A	A	A	A	A	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	B
	Wet 274	A	A	A	A	A	A	A	A	A
	Dry 274	A	A	A	A	A	A	A	A	B
2	Wet 403	A	A	A	A	A	A	A	A	A
	Dry 403	A	A	A	A	A	A	A	A	A
	Wet 274	A	A	A	A	A	A	A	A	A
	Dry 274	A	A	A	A	A	A	A	A	A
3	Wet 403	A	B	A	A	A	A	A	A	B
	Dry 403	A	A	B	A	A	A	A	A	A
	Wet 274	A	B	A	A	A	A	A	A	B
	Dry 274	A	A	B	A	A	A	A	A	A
4	Wet 403	A	B	B	A	B	B	A	B	B
	Dry 403	A	A	A	A	B	B	A	B	B
	Wet 274	A	B	B	A	B	B	A	B	B
	Dry 274	A	A	A	A	B	B	A	A	A
5	Wet 403	A	A	A	A	B	B	A	B	B
	Dry 403	A	A	A	A	B	A	A	A	B
	Wet 274	A	A	A	A	B	B	A	B	B
	Dry 274	A	A	A	A	B	A	A	A	B
6	Wet 403	A	A	A	A	B	B	A	B	A
	Dry 403	A	A	A	A	B	A	A	B	A
	Wet 274	A	A	A	A	B	B	A	B	A
	Dry 274	A	A	A	A	B	B	A	B	A

Table 6. A comparison of the sediment hydrocarbon levels of samples collected at stations other than the Deep Water Port sites. Measurements made at 403 and 274 and reported on a wet and dry basis. Sites not having a common letter differ significantly at the .05% level. Comparisons must be made down the table,not across.

Cruise	Site	Wet 403	Dry 403	Wet 274	Dry 274
3	H-5	A	AB	A	A
	H-7	A	A	A	A
	G-1	AB	AB	A	A
	F-8	AB	AB	A	A
	E-1	BC	C	A	A
	D-5	BC	BC	A	A
	C-2	A	A	A	A
	C-1	C	C	A	A
	B-5	AB	ABC	A	A
	B-4	BC	BC	A	A
	A-B	ABC	ABC	A	A
	A-1	-	-	-	-
	A-3	A	AB	A	A
4	H-5	A	A	A	A
	H-7	A	A	A	A
	G-1	A	A	B	B
	F-8	A	A	A	A
	E1	A	A	B	B
	D5	A	A	A	A
	C2	A	A	A	A
	C1	A	A	B	A
	B5	B	B	C	C
	B4	A	A	B	B
	AB	A	A	AB	A
	A-1	A	A	A	A
	A3	A	A	A	A
5	H-5	A	A	AB	A
	H-7	A	A	ABC	AB
	G-1	A	A	AB	A
	F-8	A	A	A	A
	E-1	A	A	ABC	AB
	D-5	A	A	ABC	B
	C-2	A	A	ABC	AB
	C-1	A	A	ABC	B
	B-5	A	A	BC	B
	B-4	A	A	D	C
	AB	A	A	CD	BC
	A-1	A	A	AB	A
	A-3	A	A	AB	A

Table 6. (Cont'd)

Cruise	Site	Wet 403	Dry 403	Wet 274	Dry 274
6	H-5	A	A	AB	ABC
	H-7	A	A	A	A
	G-1	A	A	A	A
	F-8	A	A	ABC	ABC
	E-1	B	B	D	D
	D-5	A	AB	CD	BCD
	C-2	A	A	A	A
	C-1	A	AB	AB	AB
	B-5	C	C	E	E
	B-4	A	AB	CD	CD
	AB	AB	AB	CD	BC
	A-1	A	A	A	A
	A-3	A	AB	AB	BCD

Table 7. A comparison of the sediment hydrocarbon levels at each sampling station along the Gulf of Mexico during each of 6 cruises. Measurements made at 403 and 274 and reported on a wet and dry weight basis. Cruises not followed by a common letter are significantly different at the .05% level. Comparisons must be made down the table,not across.

Site	Cruise	Wet 403	Dry 403	Wet 274	Dry 274
H-5	1	-*	-	-	-
	2	-	-	-	-
	3	A	A	A	A
	4	A	A	A	A
	5	A	A	B	B
	6	A	A	A	AB
H-6	1	A	A	A	A
	2	A	A	A	AB
	3	B	B	A	AB
	4	A	A	BC	C
	5	A	A	C	C
	6	A	A	B	B
H-7	1	A	A	A	A
	2	A	A	A	A
	3	A	A	A	A
	4	A	A	A	A
	5	A	A	B	B
	6	A	A	A	A
G-1	1	-	-	-	-
	2	A	A	A	A
	3	B	B	AB	AB
	4	A	A	D	D
	5	A	A	CD	CD
	6	A	A	BC	BC
F-8	1	-	-	-	-
	2	-	-	-	-
	3	B	B	A	A
	4	A	A	A	B
	5	A	A	A	B
	6	A	A	B	C
E-1	1	-	-	-	-
	2	A	A	A	A
	3	B	B	A	A
	4	A	A	A	A
	5	A	A	A	A
	6	A	A	A	A

Table 7. (Cont'd)

Site	Cruise	Wet 403	Dry 403	Wet 274	Dry 274
D-5	1	-	-	-	-
	2	A	A	A	A
	3	A	A	A	A
	4	A	A	A	A
	5	A	A	A	A
	6	A	A	A	A
C-2	1	A	A	A	A
	2	A	A	A	A
	3	A	A	A	A
	4	A	A	A	A
	5	A	A	B	B
	6	-	-	A	A
C-1	1	A	A	A	A
	2	A	A	A	A
	3	B	B	A	A
	4	A	A	A	A
	5	A	A	A	A
	6	A	A	A	A
B-6	1	D	C	AB	A
	2	AB	ABC	ABC	AB
	3	C	BC	A	A
	4	AB	AB	C	B
	5	A	A	D	B
	6	A	A	BC	A
B-5	1	A	BC	A	A
	2	A	AB	A	A
	3	A	AB	A	A
	4	A	C	B	B
	5	A	A	A	A
	6	A	A	A	A
AB	1	-	-	-	-
	2	-	-	-	-
	3	B	B	A	A
	4	A	A	A	A
	5	A	A	B	B
	6	A	A	A	A
A-1	1	A	A	A	A
	2	A	A	A	A
	3	-	-	-	-
	4	A	A	A	A
	5	A	A	B	B
	6	A	A	C	C

Table 7. (Cont'd)

Site	Cruise	Wet 403	Dry 403	Wet 274	Dry 274
A-2	1	B	B	A	A
	2	A	A	A	A
	3	B	B	A	A
	4	A	A	A	A
	5	A	A	B	B
	6	A	A	A	A
A-3	1	A	A	A	A
	2	A	A	A	A
	3	B	B	A	A
	4	A	A	A	A
	5	A	A	AB	AB
	6	A	A	B	B

Table 8. A comparison of [A] the difference between the 4 methods of reporting used to obtain the hydrocarbon levels at the 3 Deep Water Port sites during each cruise and [B] the significant difference between the levels of hydrocarbons present at the 3 Deep Water Port sites from cruise to cruise. Methods and cruises not followed by a common letter are significant at .05% level.

		[A] Method of Reporting Comparison*				[B] Cruise Comparison **			
Site	Cruise	Wet 403	Dry 403	Wet 274	Dry 274	Wet 403	Dry 403	Wet 274	Dry 274
1(H6)	1	A	A	A	A	A	A	A	A
	2	-***	-	-	-	A	A	A	AB
	3	B	C	A	A	B	B	A	AB
	4	A	AB	B	C	A	A	BC	C
	5	A	A	B	C	A	A	C	C
	6	A	A	B	C	A	A	B	B
2(B-6)	1	AB	B	A	A	D	C	AB	A
	2	A	A	A	A	AB	ABC	ABC	AB
	3	B	C	A	A	C	BC	A	A
	4	A	BC	AB	C	AB	AB	C	B
	5	A	A	B	C	A	A	D	B
	6	A	A	B	C	A	A	BC	B
3(A-2)	1	A	A	A	A	B	B	A	A
	2	A	A	A	A	A	A	A	A
	3	B	C	A	A	B	B	A	A
	4	A	A	B	C	A	A	A	A
	5	A	A	B	C	A	A	B	B
	6	A	A	B	C	A	A	A	A

* Comparisons should be made across, not down.
** Comparisons should be made down, not across.
*** Indicates no data.

Table 9. A comparison of the ratio (274/403) of the levels of hydrocarbons present in the sediment samples obtained from 3 deep water port sites during each of 6 cruises as measured using analyses at both 274 and 403 nm and reported on a dry wgt. basis.

	Sites		
Cruise	1(H-6)	2(B-6)	3(B-2)
1	0.00	0.11	0.62
2	0.00	0.55	0.00
3	0.18	0.18	0.14
4	2.58	1.35	4.12
5	178.5	15.40	6.07
6	55.6	2.7	11.17

Table 10. A comparison of the ratios (dry/wet) of the levels of hydrocarbons present in the sediments obtained from the 3 deep water port sites during each of 6 cruises as measured using excitation at 403 nm and measuring emission at 418 nm.

	DWP Sites		
Cruise	1	2	3
1	1.43	1.41	1.30
2	0.0	1.87	1.48
3	1.63	1.91	1.53
4	1.59	2.06	1.48
5	1.25	1.31	1.33
6	1.44	3.08	1.45

Table 11. Raw data collected at various sampling stations along the Gulf of Mexico from Galveston, Texas to Pascagoula, Mississippi during 6 cruises.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude		Longitude	
1.	1	1	A-1	1	1	206	0	162	0	29	57.85	88	26.18
2.	1	3	A-1	1	1	0	0	0	0	30	05.69	88	18.50
3.	1	6	A-1	1	1	317	0	244	0		.		.
4.	1	8	A-1	1	1	30	0	25	0		.		.
5.	1	9	A-1	1	1	782	0	475	0		.		.
6.	1	11	A-2	11	2	647	0	488	0	29	50.57	88	14.50
7.	1	13	A-2	11	2	194	0	150	0	29	50.59	88	14.54
8.	1	15	A-2	11	2	0	0	0	0		.		.
9.	1	17	A-2	11	2	0	0	0	0	29	50.64	88	14.63
10.	1	19	A-2	11	2	0	0	0	0	29	50.65	88	14.69
11.	1	21	A-2	11	2	1068	2501	845	1978	29	50.07	88	14.33
12.	1	23	A-2	11	2	1266	486	1014	389	29	50.15	88	14.38
13.	1	25	A-2	11	2	177	0	149	0	29	50.21	88	14.41
14.	1	28	A-2	11	2	89	0	66	0	29	50.48	88	14.56
15.	1	29	A-2	11	2	237	0	167	0	29	50.34	88	14.40
16.	1	31	A-2	11	2	0	0	0	0	29	50.41	88	14.32
17.	1	33	A-2	11	2	206	0	145	0	29	50.49	88	14.36
18.	1	35	A-2	11	2	455	0	346	0	29	50.55	88	14.39
19.	1	37	A-2	11	2	426	0	306	0	29	50.63	88	14.41
20.	1	39	A-2	11	2	35	0	25	0	29	50.73	88	14.45
21.	1	41	A-3	1	3	30	0	25	0	29	34.90	88	09.90
22.	1	43	A-3	1	3	40	0	25	0	29	34.99	88	09.94
23.	1	46	A-3	1	3	32	0	25	0		.		.
24.	1	47	A-3	1	3	0	0	0	0	29	35.05	88	10.07
25.	1	49	A-3	1	3	0	0	0	0	29	35.09	88	10.08
26.	1	51	B-5	1	17	3302	4599	11122	2194	28	52.90	89	41.10
27.	1	54	B-5	1	17	935	0	407	0		.		.
28.	1	55	B-5	1	17	0	0	0	0	28	52.80	89	41.20
29.	1	57	B-5	1	17	0	0	0	0	28	52.90	89	41.20
30.	1	59	B-5	1	17	4648	0	2106	0	28	53.00	89	41.40
31.	1	61	B-6	4	16	269	0	169	0	28	56.65	89	59.14
32.	1	63	B-6	4	16	2422	639	1380	364	28	56.75	89	58.73
33.	1	65	B-6	4	16	0	0	0	0	28	56.84	89	58.78
34.	1	68	B-6	4	16	2041	0	1338	0		.		.
35.	1	70	B-6	4	16	454	0	307	0		.		.
36.	1	72	B-6	4	16	1920	0	1213	0		.		.
37.	1	73	B-6	4	16	270	0	188	0	28	56.90	89	59.36
38.	1	75	B-6	4	16	4184	646	2953	456	28	57.00	89	59.35
39.	1	77	B-6	4	16	42	0	25	0	28	57.05	89	59.35
40.	1	79	B-6	4	16	335	0	199	0	28	57.10	89	59.4
41.	1	81	L	1	5	72	0	25	0	28	56.50	89	59.40
42.	1	83	L	1	5	165	0	97	0	28	56.40	89	59.30
43.	1	86	L	1	5	263	0	149	0		.		.
44.	1	88	L	1	5	316	0	185	0		.		.
45.	1	90	L	1	5	45	0	25	0		.		.
46.	1	91	C-1	1	6	42	0	25	0	28	53.70	90	14.34
47.	1	94	C-1	1	6	43	0	25	0		.		.
48.	1	95	C-1	1	6	45	0	25	0	28	54.02	90	14.50
49.	1	97	C-1	1	6	0	0	0	0	28	54.13	90	14.59
50.	1	99	C-1	1	6	1932	412	1059	226	28	54.40	90	14.60
51.	1	101	C-2	1	7	198	0	127	0	28	44.55	90	14.73
52.	1	103	C-2	1	7	809	0	492	0	28	44.65		.
53.	1	105	C-2	1	7	0	0	0	0	28	44.70		.
54.	1	107	C-2	1	7	1651	142	985	95	28	44.75		.
55.	1	109	C-2	1	7	0	0	0	0	28	44.79		.
56.	1	111	H-5	1	8	0	0	0	0	28	14.25	95	09.60
57.	1	114	H-5	1	8	36	0	25	0		.		.
58.	1	117	H-5	1	8	0	0	0	0	28	14.25	95	09.60
59.	1	118	H-5	1	8	0	0	0	0		.		.
60.	1	119	H-5	1	8	567	0	388	0	28	14.30	95	09.81
61.	1	121	H-6	4	9	324	0	220	0	28	31.29	95	14.11
62.	1	123	H-6	4	9	151	0	110	0	28	31.30	95	14.20
63.	1	125	H-6	4	9	0	0	0	0	28	31.30	95	14.26
64.	1	127	H-6	4	9	0	0	0	0	28	31.40	95	14.33
65.	1	129	H-6	4	9	0	0	0	0	28	31.41	95	14.40

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
66.	1	132	1	1	0	0	0	0	.	.
67.	1	133	1	1	0	0	0	0	28 31.79	95 14.24
68.	1	135	1	1	0	0	0	0	28 31.93	95 14.33
69.	1	137	1	1	0	0	0	0	28 32.15	95 14.49
70.	1	139	1	1	0	0	0	0	28 32.08	95 14.42
71.	1	141	1	1	0	0	0	0	.	.
72.	1	143	1	1	0	0	2	0	28 32.14	95 13.78
73.	1	145	1	1	0	0	0	0	.	.
74.	1	147	1	1	0	0	0	0	28 32.37	95 13.91
75.	1	149	1	1	0	0	0	0	28 32.24	95 13.82
76.	1	151	1	1	0	0	0	0	28 45.29	95 18.11
77.	1	154	1	1	350	0	26	0	.	.
78.	1	155	1	1	0	0	0	0	28 45.17	95 18.11
79.	1	157	1	1	33	0	2	0	28 45.35	95 18.19
80.	1	159	1	1	0	0	0	0	28 45.05	95 18.14
81.	1	170	1	1	0	0	0	0	28 16.70	96 15.00
82.	1	172	1	1	4	0	2	0	.	.
83.	1	174	1	1	0	0	0	0	28 16.00	.
84.	1	176	1	1	5	0	2	0	.	.
85.	1	178	1	1	72	0	15	0	28 16.30	96 15.10
86.	1	180	1	1	22	0	5	0	28 42.20	95 17.00
87.	1	182	1	1	0	0	15	0	28 42.10	95 17.10
88.	1	184	1	1	0	0	0	0	28 41.90	95 17.30
89.	1	186	1	1	0	0	0	0	28 41.80	95 17.90
90.	1	188	1	1	0	0	0	0	28 41.70	95 18.70
91.	1	190	1	1	0	0	0	0	28 32.20	95 14.40
92.	1	192	1	1	0	0	0	0	28 32.20	95 14.40
93.	1	194	1	1	0	0	0	0	28 32.10	95 14.30
94.	1	196	1	1	0	0	0	0	28 32.10	95 14.80
95.	1	198	1	1	0	0	0	0	28 32.10	95 14.80
96.	1	200	2	2	0	0	0	0	28 15.10	95 10.50
97.	1	202	2	2	0	0	0	0	28 15.20	95 10.60
98.	1	204	2	2	0	0	0	0	28 15.10	95 11.00
99.	1	206	2	2	0	0	0	0	28 16.20	95 11.40
100.	1	208	2	2	0	0	0	0	28 16.10	95 11.70
101.	1	210	2	2	0	0	0	0	00 00.40	94 01.30
102.	1	212	2	2	0	0	0	0	00 00.70	94 01.10
103.	1	214	2	2	0	0	0	0	00 00.70	94 01.10
104.	1	216	2	2	0	0	0	0	00 00.40	94 01.40
105.	1	218	2	2	0	0	0	0	00 00.10	94 01.40
106.	1	220	2	2	0	0	0	0	28 13.50	93 04.60
107.	1	222	2	2	0	0	0	0	.	.
108.	1	224	2	2	0	0	0	0	.	.
109.	1	226	2	2	0	0	0	0	.	.
110.	1	228	2	2	0	0	0	0	28 13.70	93 04.00
111.	1	230	2	2	178	10	0	0	28 55.70	91 58.50
112.	1	232	2	2	5	2	0	0	.	.
113.	1	234	2	2	1	2	0	0	.	.
114.	1	236	2	2	35	2	0	0	.	.
115.	1	238	2	2	1	2	0	0	.	.
116.	1	240	2	2	2	2	0	0	28 56.00	91 58.40
117.	1	242	2	2	7	2	0	0	28 30.50	90 44.00
118.	1	244	2	2	9	2	0	0	.	.
119.	1	246	2	2	54	3	0	0	.	.
120.	1	248	2	2	22	3	0	0	.	.
121.	1	250	2	2	1	5	0	0	.	.
122.	1	252	2	2	3	8	0	0	.	.
123.	1	254	2	2	3	0	0	0	.	.
124.	1	256	2	2	9	1	0	0	.	.
125.	1	258	2	2	7	0	0	0	.	.
126.	1	260	2	2	6	0	0	0	.	.
127.	1	262	2	2	6	0	0	0	.	.
128.	1	264	2	2	4	6	0	0	.	.
129.	1	266	2	2	17	1	0	0	.	.
130.	1	268	2	2	19	3	0	0	.	.
131.	1	270	2	2	16	0	0	0	.	.
132.	1	272	2	2	0	0	0	0	.	.
133.	1	274	2	2	5	3	0	0	.	.
134.	1	276	2	2	16	1	0	0	.	.
135.	1	278	2	2	16	0	0	0	.	.
136.	1	280	2	2	17	1	0	0	.	.
137.	1	282	2	2	17	0	0	0	.	.
138.	1	284	2	2	17	0	0	0	.	.
139.	1	286	2	2	17	0	0	0	.	.
140.	1	288	2	2	17	0	0	0	.	.
141.	1	290	2	2	17	0	0	0	.	.
142.	1	292	2	2	17	0	0	0	.	.
143.	1	294	2	2	17	0	0	0	.	.
144.	1	296	2	2	17	0	0	0	.	.
145.	1	298	2	2	17	0	0	0	.	.

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
146.		300	A1-2	11 2	37	0	25	0	29 49.60	88 14.40
147.		302	A1-2	11 2	0	0	0	0	29 49.60	88 14.40
148.									29 49.60	88 14.40
149.									29 49.50	88 14.40
150.									29 49.50	88 14.40
151.									30 04.50	88 29.30
152.										
153.										
154.										
155.										
156.					154	0	110	0	34.76	88 12.62
157.							25		34.71	88 12.62
158.					150	235	108	169	34.70	88 12.63
159.					135	0	0	0	34.70	88 12.65
160.					414		305		34.69	88 12.67
161.				17	1817	959	1272	671	39.98	88 12.79
162.				17	422	0	150	0	39.98	88 12.78
163.				17	550		285		39.98	88 12.79
164.				17	300	0	254	0	40.01	88 12.79
165.				17	38		25		40.01	88 12.61
166.				2	39	0	25	0	44.48	88 13.16
167.					40	0	25	0	44.48	88 13.17
168.					301	163	199	108	44.48	88 13.18
169.					38	0	25	0	44.50	88 13.18
170.					132		84		44.47	88 13.22
171.				11	0	0	0	0	50.01	88 14.77
172.				11	14	0	0	0	50.02	88 14.16
173.				11	563		345		50.01	88 14.47
174.				11	265	172	169	110	50.01	88 14.48
175.				11	30	0	25	0	50.00	88 14.49
176.					33		25		54.71	88 15.03
177.					0	0	0	0	54.70	88 15.02
178.					418		266		54.66	88 15.00
179.					300	0	216	0	54.66	88 15.01
180.					172		126		54.64	88 15.00
181.				18	860	470	1287	325	59.60	88 15.57
182.					217	0	150	0	59.44	88 15.58
183.									59.44	88 15.58
184.					69	0	25	0	59.39	88 15.61
185.					197		143		59.34	88 15.60
186.									03.88	88 16.33
187.					0	0	0	0	03.81	88 16.36
188.									03.75	88 16.39
189.					0	0	0	0	03.70	88 16.41
190.					33		25		03.65	88 16.43
191.					34	0	25	0	54.84	87 58.53
192.					0	0	0	0	54.79	87 58.48
193.					34		25		54.76	87 58.44
194.					0	0	0	0	54.74	87 58.42
195.					34		25		54.70	87 58.36
196.					33		25		53.91	88 01.72
197.					36		25		53.85	88 01.66
198.					32		24		53.82	88 01.62
199.					35		26		53.80	88 01.59
200.					372	109	265	78	53.78	88 01.54
201.					402		288		52.80	88 04.54
202.					0	0	0	0	52.78	88 04.50
203.					36		25		52.76	88 04.48
204.					137	230	93	162	52.73	88 04.38
205.					0	0	0	0	52.72	88 04.37
206.					751	214	518	148	51.64	88 07.87
207.					764	0	566	0	51.58	88 07.80
208.					528		368		51.56	88 07.78
209.					1150	175	1106	126	51.55	88 07.69
210.					1390	0	1105	0	51.55	88 07.67
211.					1557	104	1111	74	51.00	88 11.29
212.					284	0	205	0	50.98	88 11.19
213.					34		25		50.98	88 11.14
214.					615		445		50.98	88 11.10
215.					0	0	0	0	50.97	88 11.05
216.					916		616		50.89	88 17.67
217.					880		592		50.84	88 17.59
218.					389		261		50.83	88 17.54
219.					157	103	100	66	50.81	88 17.51
220.					997	0	555	0	47.80	88 17.45
221.					2224		1544		50.10	88 21.44
222.					957		655		50.00	88 21.40
223.					992		680		49.88	88 21.40
224.					2114	178	1344	110	49.88	88 21.40
225.					1145	0	765	0	49.70	88 21.40

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
226.		15-1				0	0	0	0	50.70	25.10
227.								39		50.80	25.20
228.								25		50.50	25.10
229.								25		50.30	25.10
230.								0		50.20	25.20
231.								70		51.10	28.00
232.								132		51.00	28.30
233.								25		50.90	28.00
234.								0		50.70	28.00
235.								66		50.70	28.00
236.								0		50.80	31.40
237.								235		50.70	31.40
238.								0		50.60	31.40
239.								115		50.40	31.40
240.								0		50.40	31.50
241.								25		34.22	10.16
242.								132		34.23	10.17
243.								225		34.27	10.18
244.								345		34.32	10.20
245.								25		34.21	10.21
246.								61		17.18	26.01
247.								504		17.16	26.03
248.								0		17.14	26.04
249.								124		17.12	26.05
250.								242		17.12	26.06
251.								114		56.80	11.80
252.								0		56.70	11.80
253.								0		56.70	11.90
254.								243		56.80	11.90
255.								253		56.80	11.90
256.								78		53.80	43.40
257.								258		53.80	43.50
258.								709		53.80	43.60
259.								0		53.80	43.60
260.								0		53.80	43.70
261.								0		59.20	12.00
262.								0		59.00	12.00
263.								0		58.00	12.00
264.								0		57.90	12.00
265.								0		57.90	12.00
266.								0		57.20	10.40
267.								0		57.10	10.40
268.								0		57.10	10.40
269.								0		57.10	10.50
270.								0		57.00	10.50
271.								0		57.50	09.20
272.								0		57.50	09.10
273.								0		57.40	09.10
274.								0		57.30	09.10
275.								0		57.10	09.00
276.								0		57.00	08.60
277.								0		57.10	07.30
278.								0		57.00	07.20
279.								0		56.90	07.10
280.								0		56.80	07.20
281.								0		57.00	05.40
282.								0		56.90	05.50
283.								0		56.90	05.60
284.								0		56.90	05.60
285.								0		56.80	05.70
286.								0		55.80	03.50
287.								0		55.70	03.70
288.								0		55.70	03.70
289.								0		55.60	03.80
290.								0		55.60	03.90
291.								0		56.20	01.60
292.								0		56.20	01.60
293.								0		56.10	01.70
294.								0		56.10	01.80
295.								0		56.10	01.80
296.								0		55.70	00.70
297.								0		55.70	00.80
298.								0		55.60	01.00
299.								0		55.80	01.10
300.								0		55.60	01.30
301.								0		55.70	58.80
302.								0		55.70	59.10
303.								0		55.70	59.20
304.								0		55.70	59.30
305.								0		55.70	59.40

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
306.	3	12-1	B-6	1216	90	0	25	0	28 53.50	89 54.10
307.		12-2	B-6	1216	1122	245	476	104	28 53.40	89 54.20
308.		12-3	B-6	1216	0	0	0	0	28 53.40	89 54.40
309.		12-4	B-6	1216	319	0	141	0	28 53.60	89 54.50
310.		12-5	B-6	1216	1493	0	627	0	28 53.50	89 54.70
311.		13-1	B-6	1316	0	0	0	0	28 51.50	89 48.60
312.		13-2	B-6	1316	362	196	153	83	28 51.50	89 48.80
313.		13-3	B-6	1316	0	0	0	0	28 51.50	89 48.30
314.		13-4	B-6	1316	277	0	113	0	28 51.50	89 48.60
315.		13-5	B-6	1316	311	0	127	0	28 51.50	89 50.00
316.		14-1	B-5	1217	274	0	115	0	28 53.30	89 43.50
317.		14-2	B-5	1217	140	0	59	0	28 53.30	89 43.50
318.		14-3	B-5	1217	128	0	53	0	28 53.30	89 43.60
319.		14-4	B-5	1217	1003	179	446	73	28 53.30	89 43.80
320.		14-5	B-5	1217	291	0	117	0	28 53.30	89 43.70
321.		15-1	B-6	116	38	0	25	0	28 40.90	90 05.90
322.		15-2	B-6	116	209	0	155	0	28 40.90	90 05.90
323.		15-3	B-6	116	204	0	201	0	28 40.80	90 06.00
324.		15-4	B-6	116	38	0	25	0	28 40.80	90 06.00
325.		15-5	B-6	116	464	0	298	0	28 40.80	90 06.00
326.		16-1	B-6	216	441	370	219	184	28 45.50	90 03.20
327.		16-2	B-6	216	546	0	298	0	28 45.50	90 03.20
328.		16-3	B-6	216	0	0	0	0	28 45.40	90 03.20
329.		16-4	B-6	216	1350	0	709	0	28 45.40	90 03.30
330.		16-5	B-6	216	307	0	162	0	28 45.40	90 03.30
331.		17-1	B-6	316	853	578	515	349	28 50.10	90 01.80
332.		17-2	B-6	316	731	183	422	106	28 50.10	90 01.90
333.		17-3	B-6	316	728	0	439	0	28 50.10	90 01.90
334.		17-4	B-6	316	631	0	341	0	28 50.10	90 01.90
335.		17-5	B-6	316	595	0	329	0	28 50.10	90 02.00
336.		18-1	B-6	1116	709	432	440	241	28 00.90	89 57.15
337.		18-2	B-6	1116	2324	151	1234	80	29 01.12	89 57.15
338.		18-3	B-6	1116	2917	1553	1540	820	29 01.12	89 57.15
339.		18-4	B-6	1116	372	0	203	0	29 01.16	89 57.34
340.		18-5	B-6	1116	1650	0	868	0	29 01.15	89 57.34
341.		19-1	B-6	1016	824	229	453	126	29 04.87	89 54.35
342.		19-2	B-6	1016	1133	196	595	103	29 04.83	89 54.37
343.		19-3	B-6	1016	2028	1008	1030	513	29 04.94	89 54.38
344.		19-4	B-6	1016	1454	222	807	123	29 04.96	89 54.41
345.		19-5	B-6	1016	2260	128	1286	73	29 04.97	89 54.43
346.		20-1	B-6	916	493	0	206	0	29 08.40	89 53.40
347.		20-2	B-6	916	1301	161	761	88	29 08.40	89 53.40
348.		20-3	B-6	916	1049	0	615	0	29 08.40	89 53.40
349.		20-4	B-6	916	640	0	377	0	29 08.40	89 53.40
350.		20-5	B-6	916	303	0	186	0	29 08.50	89 53.40
351.		1-1	B-6	1 6	1234	218	780	138	28 53.80	90 12.30
352.		1-2	B-6	1 6	426	0	256	0	28 53.70	90 12.50
353.		1-3	B-6	1 6	2032	0	1282	0	28 53.70	90 12.50
354.		1-4	B-6	1 6	1661	0	1005	0	28 53.60	90 12.40
355.		1-5	B-6	1 6	4127	2741	2538	1686	28 53.60	90 12.30
356.		1-1	B-7	1 7	0	0	0	0	28 44.00	90 09.80
357.		1-2	B-7	1 7	45	0	25	0	28 43.90	90 09.80
358.		1-3	B-7	1 7	0	0	0	0	28 43.90	90 09.80
359.		1-4	B-7	1 7	0	0	0	0	28 43.90	90 09.80
360.		1-5	B-7	1 7	121	0	69	0	28 43.80	90 10.00
361.		11-1	B-5	115	300	0	155	0	28 30.30	90 45.70
362.		11-2	B-5	115	48	0	25	0	28 30.20	90 45.70
363.		11-3	B-5	115	356	0	187	0	28 30.10	90 45.70
364.		11-4	B-5	115	4517	3025	2159	1446	28 30.00	90 45.70
365.		11-5	B-5	115	1344	441	656	215	28 29.90	90 45.60
366.		12-1	B-5	115	36	0	25	0	28 56.22	91 57.57
367.		12-2	B-5	115	128	102	80	64	28 56.43	91 58.02
368.		12-3	B-5	115	390	0	226	0	28 55.72	91 57.98
369.		12-4	B-5	115	4113	1322	2628	845	28 55.81	91 58.05
370.		12-5	B-5	115	2558	185	1595	115	28 55.86	91 58.11
371.		13-1	B-5	113	371	0	203	0	28 13.30	93 03.60
372.		13-2	B-5	113	119	0	90	0	28 13.30	93 03.60
373.		13-3	B-5	113	81	0	62	0	28 13.20	93 03.80
374.		13-4	B-5	113	452	0	347	0	28 13.20	93 03.90
375.		13-5	B-5	113	361	0	292	0	28 13.10	93 03.00
376.		14-1	B-5	112	1125	142	810	102	28 04.40	94 01.40
377.		14-2	B-5	112	0	0	0	0	28 09.40	94 01.50
378.		14-3	B-5	112	148	0	114	0	28 09.30	94 01.60
379.		14-4	B-5	112	567	0	421	0	28 09.20	94 01.60
380.		14-5	B-5	112	241	0	175	0	28 09.10	94 01.30
381.		1-1	B-4	1 4	39	0	25	0	28 15.00	95 10.80
382.		1-2	B-4	1 4	0	0	0	0	28 15.00	95 10.80
383.		1-3	B-4	1 4	37	0	25	0	28 15.00	95 10.80
384.		1-4	B-4	1 4	234	0	152	0	28 15.00	95 10.90
85.		1-5	B-4	1 4	39	0	25	0	28 14.90	95 11.00

Table 11 cont.

Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
466.		17-1				150	0	87	0	29.40	95 15.20
467.		17-2				114	0	72	0	29.30	95 15.20
468.						36	0	260	0	29.20	95 15.20
469.						43	0	25	0	29.10	95 15.20
470.						0	0	0	0	29.00	95 15.20
471.						0	0	0	0	30.10	95 13.40
472.						216	0	134	0	30.00	95 13.50
473.						0	0	0	0	30.10	95 12.90
474.						15	0	10	0	30.10	95 13.00
475.						43	0	25	0	30.00	95 13.10
476.						0	0	0	0	43.70	95 11.80
477.						0	0	0	0	43.70	95 11.90
478.						206	0	126	0	43.80	95 12.10
479.						0	0	0	0	43.80	95 12.10
480.						0	0	0	0	44.00	95 12.20
481.						43	0	25	0	44.20	95 12.00
482.						760	0	516	0	44.30	95 12.10
483.						43	0	25	0	44.40	95 12.20
484.						0	0	0	0	44.50	95 12.20
485.						0	0	0	0	44.40	95 12.20
486.						0	0	0	0	42.10	95 18.40
487.						0	0	0	0	42.00	95 17.80
488.						0	0	0	0	41.80	95 18.30
489.						37	0	25	0	42.70	95 17.50
490.						0	0	0	0	42.60	95 17.70
491.						787	14	507	95	11.50	95 11.50
492.							124		78	15.11	95 11.94
493.							0		27	15.28	95 11.81
494.							0		66	15.28	95 11.81
495.							0		37	15.91	95 07.01
496.							0		25	16.36	95 16.90
497.							0		33	16.56	95 16.94
498.							0		33	16.74	95 16.98
499.							0		38	16.85	95 16.87
500.							0		50	17.00	95 16.84
501.							0		47	22.34	95 10.31
502.							0		61	22.48	95 16.16
503.							0		12	25.62	95 15.01
504.							0		63	22.13	95 15.84
505.							0		152	22.91	95 15.83
506.							0		125	27.05	95 15.05
507.							0		76	27.20	95 14.93
508.							0		24	27.45	95 14.83
509.							0		44	27.95	95 14.71
510.							0		66	27.73	95 14.67
511.							0		88	32.06	95 14.26
512.							0		175	32.30	95 14.12
513.							0		33	32.41	95 14.01
514.							0		28	32.50	95 13.95
515.							0		117	32.66	95 13.88
516.							0		12	32.48	95 17.88
517.							0		7	32.70	95 17.60
518.							0		26	32.94	95 17.41
519.							0		40	33.15	95 17.20
520.							0		44	33.38	95 17.13
521.							0		9	33.08	95 21.53
522.							0		7	33.10	95 21.40
523.							0		13	33.20	95 21.24
524.							0		6	33.27	95 21.17
525.							0		6	33.35	95 21.08
526.							0		18	33.16	95 25.28
527.							0		8	33.21	95 25.17
528.							0		18	33.34	95 25.05
529.							0		11	33.44	95 24.86
530.							0		7	33.16	95 27.92
531.							0		20	33.25	95 27.81
532.							0		25	33.33	95 26.67
533.							0		66	33.43	95 27.57
534.							0		56	33.56	95 27.42
535.							0		33	33.43	95 31.05
536.							0		55	33.50	95 30.97
537.							0		55	33.66	95 30.96
538.							0		55	33.66	95 30.80
539.							0		66	33.66	95 30.14
540.							0		22	17.70	95 17.92
541.							0		66	17.80	95 18.25
542.							0		66	17.80	95 17.71
543.							0		66	17.92	95 17.92
544.							0		66	17.42	95 17.42
545.							0		66		

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
546.											
547.											
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621.											
622.											
623.											
624.											
625.											

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
626.		137	[illegible]	616		6	14	3	28	57.40	05.60
627.		138	[illegible]	616		237	4461	119	231	57.36	05.46
628.		139	[illegible]	616		138	3501	69	150	57.32	05.33
629.		140	[illegible]	616		248	1400	121	68	57.34	05.19
630.		141	[illegible]	616		132	191	55	95	57.34	05.05
631.		142	[illegible]	716		0	59	0	28	58.12	09.20
632.		143	[illegible]	716		0	74	0	24	58.08	09.10
633.		144	[illegible]	716		0	41	0	24	58.05	09.03
634.		145	[illegible]	716		386	5341	152	223	58.05	08.97
635.		146	[illegible]	716		295	9466	150	449	58.04	08.87
636.		147	[illegible]	816		1033	9600	558	480	58.03	12.33
637.		148	[illegible]	816		150	2566	74	127	58.08	12.14
638.		149	[illegible]	816		96	4088	51	219	58.04	12.10
639.		150	[illegible]	816		0	61	0	28	58.05	12.04
640.		151	[illegible]	816		45	1244	26	69	58.02	11.96
641.		152	[illegible]	116		26	1377	12	67	53.72	12.02
642.		153	[illegible]	116		127	3566	55	187	53.61	12.84
643.		154	[illegible]	116		108	3293	58	223	53.55	12.73
644.		155	[illegible]	116		114	3155	56	157	53.55	12.71
645.		156	[illegible]	116		160	3622	83	189	53.52	12.50
646.		157	[illegible]	916		2439	2[illegible]	[illegible]	1206	54.56	12.56
647.		158	[illegible]	916		2629	2[illegible]	[illegible]	1584	54.61	12.61
648.		159	[illegible]	1016		6107	4233	3040	2142	54.75	12.22
649.		160	[illegible]	1016		1793	2041	888	1011	54.71	12.21
650.		161	[illegible]	1016		662	1116	316	533	54.66	12.16
651.		162	[illegible]	1016		2238	3067	1064	[illegible]	54.61	12.22
652.		163	[illegible]	1016		732	1250	347	593	54.61	12.25
653.		164	[illegible]	1116		415	824	167	331	57.10	12.30
654.		165	[illegible]	1116		717	1095	331	[illegible]	57.00	12.33
655.		166	[illegible]	1116		158	501	75	230	57.05	12.22
656.		167	[illegible]	1116		1601	1748	712	[illegible]	57.05	12.26
657.		168	[illegible]	1116		222	621	101	283	57.02	12.24
658.		169	[illegible]	1216		57	224	22	92	54.22	12.35
659.		170	[illegible]	1216		296	582	123	200	54.22	12.33
660.		171	[illegible]	1216		47	421	18	167	54.27	12.27
661.		172	[illegible]	1216		70	360	27	142	54.29	12.29
662.		173	[illegible]	1216		167	259	64	100	54.32	12.30
663.		174	[illegible]	1316		39	142	16	58	54.33	12.30
664.		175	[illegible]	1316		57	217	24	90	54.33	12.30
665.		176	[illegible]	1316		42	312	18	136	54.34	12.30
666.		177	[illegible]	1316		24	107	9	141	54.36	12.32
667.		178	[illegible]	1316		162	329	64	130	54.01	12.31
668.		179	[illegible]	1416		8	241	3	102	54.02	12.30
669.		180	[illegible]	1416		85	234	36	101	54.04	12.34
670.		181	[illegible]	1416		19	166	8	59	54.05	12.33
671.		182	[illegible]	1416		218	374	87	149	54.05	12.33
672.		183	[illegible]	1416		2496	3825	1062	1202	54.02	12.32
673.		184	[illegible]	117		3624	3[illegible]	[illegible]	[illegible]	53.70	12.32
674.		185	[illegible]	117		3998	3[illegible]	[illegible]	[illegible]	53.74	12.35
675.		186	[illegible]	117		2987	3013	1228	1403	53.74	12.34
676.		187	[illegible]	117		1267	1765	517	746	53.75	12.34
677.		188	[illegible]	117		1769	2324	745	774	53.81	12.37
678.		189	[illegible]	119		856	1204	362	572	53.84	12.37
679.		190	[illegible]	119		874	1338	407	624	53.92	12.50
680.		191	[illegible]	119		940	1907	468	899	53.92	12.52
681.		192	[illegible]	119		954	2211	447	1047	53.92	12.50
682.		193	[illegible]	119		477	973	212	533	53.91	12.58
683.		194	[illegible]	118		3	121	2	59	57.26	27.26
684.		195	[illegible]	118		95	2455	69	176	57.07	26.98
685.		196	[illegible]	118		257	2533	127	1966	56.98	26.98
686.		197	[illegible]	118		171	2537	125	1736	56.77	26.63
687.		198	[illegible]	118		143	1755	100	1354	56.63	26.58
688.		199	[illegible]	118		19	75	15	557	56.17	26.06
689.		200	[illegible]	118		158	319	115	232	56.06	26.97
690.		201	[illegible]	118		3	94	2	70	56.00	26.87
691.		202	[illegible]	118		0	82	0	56	56.02	26.74
692.		203	[illegible]	118		21	102	17	78	56.06	26.60
693.		204	[illegible]	118		0	78	0	55	56.03	26.33
694.		205	[illegible]	118		0	76	0	54	56.04	26.20
695.		206	[illegible]	118		0	91	0	64	56.04	26.21
696.		207	[illegible]	118		44	145	33	108	56.11	26.15
697.		208	[illegible]	118		29	161	20	112	56.21	26.08
698.		209	[illegible]	118		0	98	0	55	56.10	26.52
699.		210	[illegible]	217		0	75	0	53	56.15	26.32
700.		211	[illegible]	217		110	166	78	118	56.17	26.35
701.		212	[illegible]	217		0	46	0	41	56.18	26.32
702.		213	[illegible]	217		0	34	0	25	56.23	26.27
703.		214	[illegible]	217		0	34	0	22	56.08	26.49
704.		215	[illegible]	217		19	68	13	47	56.10	26.41
705.		216	[illegible]	217		0	104	0	69	56.10	26.40

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
706.		217	A-2	2	18	77	13	53	44.11	89 13.37
707.		218		2			0	82		88 13.35
708.		219						70		88 13.38
709.		220			161		11	247	44.89	88 13.33
710.		221			30	177		119	44.90	88 13.31
711.		222			31		20	441	44.90	88 13.31
712.		223				0	0	455	44.98	88 13.78
713.		224			0	0	5	178	44.78	88 13.76
714.		225			5	22	5	96	53.79	88 14.77
715.		226			0	0	0	55	53.81	88 14.75
716.		227			0	0	0	38	53.82	88 14.75
717.		228			0	0	0	33	53.81	88 14.76
718.		229			0	0	12	44	50.12	88 15.04
719.		230			0	0	0	26	50.10	88 15.04
720.		231		2	197	25	10	230	50.11	88 15.04
721.		232			91	0	0	79	50.11	88 15.04
722.		233			169	26	82	278	50.54	88 15.46
723.		234		2	13	0	0	64	50.13	88 15.64
724.		235			0	0	0	31	50.15	88 15.63
725.		236		2	2	1	16	112	50.14	88 15.64
726.		237			0	0	23	151	03.93	88 15.63
727.		238			0	0	0	85	03.90	88 15.62
728.		239			24	0	15	67	03.87	88 15.59
729.		240			0	0	0	43	03.84	88 15.57
730.		241			0	0	0	58	03.81	88 15.55
731.		242			0	0	0	23	54.05	88 57.55
732.		243			0	0	0	31	54.05	88 57.55
733.		244			0	0	0	24	54.03	88 57.54
734.		245			0	0	0	17	54.03	88 57.54
735.		246			2	1	0	24	54.03	88 57.54
736.		247			18	0	13	66	53.36	88 01.12
737.		248			0	0	0	28	53.34	88 01.12
738.		249			21	0	15	78	53.34	88 01.12
739.		250			0	0	0	35	53.34	88 01.12
740.		251			9	1	71	50	53.38	88 01.09
741.		252			0	0	11	36	53.39	88 01.09
742.		253			0	0	0	28	53.39	88 01.09
743.		254			0	0	0	13	53.34	88 01.06
744.		255			0	0	0	21	53.34	88 01.06
745.		256			157	0	113	32	53.41	88 01.07
746.		257			0	0	0	19	53.41	88 01.07
747.		258			116	0	78	60	51.07	88 07.45
748.		259			0	0	15	87	51.07	88 07.45
749.		260			0	0	4	24	51.09	88 07.45
750.		261			31	0	20	13	51.10	88 07.45
751.		262		1	0	0	0	58	50.24	88 09.05
752.		263		1	0	0	0	19	50.27	88 09.02
753.		264		1	0	0	0	67	50.31	88 09.00
754.		265		1	0	0	0	15	50.32	88 09.00
755.		266		1	0	0	0	54	50.34	88 09.00
756.		267		1	0	0	0	22	50.30	88 17.43
757.		268		1	0	0	0	67	50.30	88 17.43
758.		269		1	0	0	0	77	50.31	88 17.45
759.		270		1	0	0	0	197	50.33	88 17.45
760.		271		1	0	0	0	38	50.34	88 17.39
761.		272		1	0	0	0	120	50.76	88 21.12
762.		273		1	0	0	0	101	50.75	88 21.12
763.		274		1	0	0	0	92	50.74	88 21.08
764.		275		1	0	0	0	70	50.73	88 21.07
765.		276		1	13	0	75	148	50.76	88 21.07
766.		277		1	0	0	0	57	50.92	88 24.50
767.		278		1	0	0	0	15	50.90	88 24.50
768.		279		1	33	0	0	37	50.87	88 24.50
769.		280		1	55	0	0	27	50.87	88 24.50
770.		281		1	0	0	0	58	50.85	88 24.50
771.		282		1	0	0	0	20	50.11	88 27.87
772.		283		1	0	0	0	37	50.10	88 27.87
773.		284		1	0	0	0	87	50.10	88 27.87
774.		285		1	126	0	0	235	50.08	88 27.86
775.		286		1	0	0	0	181	50.04	88 27.86
776.		287		1	0	0	0	22	50.33	88 30.53
777.		288		1	0	0	0	28	50.30	88 30.53
778.		289		1	0	0	0	72	50.25	88 30.53
779.		290		1	0	0	0	38	50.21	88 30.53
780.		291		1	14	0	0	51	50.17	88 30.53
781.		292		1	0	0	0	10	50.29	88 30.53
782.		293		1	0	0	0	7	50.29	88 30.53
783.		294		1	0	0	0	18	50.31	88 30.53
784.		295		1	0	0	0	18	50.31	88 30.53
785.		296		1	0	0	0	17	50.03	88 30.53

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
786.										
787.										
788.										
789.										
790.										
791.										
792.										
793.										
794.										
795.										
796.										
797.										
798.										
799.										
800.										
801.										
802.										
803.										
804.										
805.										
806.										
807.										
808.										
809.										
810.										
811.										
812.										
813.										
814.										
815.										
816.										
817.										
818.										
819.										
820.										
821.										
822.										
823.										
824.										
825.										
826.										
827.										
828.										
829.										
830.										
831.										
832.										
833.										
834.										
835.										
836.										
837.										
838.										
839.										
840.										
841.										
842.										
843.										
844.										
845.										
846.										
847.										
848.										
849.										
850.										
851.										
852.										
853.										
854.										
855.										
856.										
857.										
858.										
859.										
860.										
861.										
862.										
863.										
864.										
865.										

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
865.		87									
866.		88									
867.		89									
868.		90									
869.		91									
870.		92									
871.		93									
872.		94									
873.		95									
874.		96									
875.		97									
876.		98									
877.		99									
878.		100									
879.		101									
880.		102									
881.		103									
882.		104									
883.		105									
884.		106									
885.		107									
886.		108									
887.		109									
888.		110									
889.		111									
890.		112									
891.		113									
892.		114									
893.		115									
894.		116									
895.		117									
896.		118									
897.		119									
898.		120									
899.		121									
900.		122									
901.		123									
902.		124									
903.		125									
904.		126									
905.		127									
906.		128									
907.		129									
908.		130									
909.		131									
910.		132									
911.		133									
912.		134									
913.		135									
914.		136									
915.		137									
916.		138									
917.		139									
918.		140									
919.		141									
920.		142									
921.		143									
922.		144									
923.		145									
924.		146									
925.		147									
926.		148									
927.		149									
928.		150									
929.		151									
930.		152									
931.		153									
932.		154									
933.		155									
934.		156									
935.		157									
936.		158									
937.		159									
938.		160									
939.		161									
940.		162									
941.		163									
942.		164									
943.		165									
944.		166									
945.		167									

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
946.	5	161	B	1016		135	2033	95	1438	29 03.96	89 54.40
947.		162	B	1015		626	1875	460	1403	29 03.95	89 54.53
948.		163	B	1016		24	807	19	657	29 04.68	89 54.82
949.		164	B	1016		8	1017	6	828	29 04.77	89 54.78
950.		165	B	1016		45	1449	3946	1153	29 04.74	89 54.78
951.		166	B	1116		132	1036	100	783	28 58.67	89 56.82
952.		167	B	1116		3	1181	3	948	28 58.71	89 56.82
953.		168	B	1116		28	809	24	685	28 58.72	89 56.83
954.		169	B	1116		50	1257	39	1295	28 58.78	89 56.85
955.		170	B	1115		319	1540	253	1222	28 58.81	89 56.87
956.		171	B	1216		105	1305	80	1000	28 53.14	89 53.35
957.		172	B	1216			978	3	753	28 53.22	89 53.38
958.		173	B	1216		498	1618	387	1256	28 53.30	89 53.39
959.		174	B	1216		29	594	21	432	28 53.35	89 53.41
960.		175	B	1216		309	1397	231	1045	28 53.39	89 53.42
961.		176	B	1316		2	164	1	127	28 51.11	89 47.48
962.		177	B	1316		0	246	0	197	28 50.99	89 47.56
963.		178	B	1316		0	358	0	288	28 50.95	89 47.61
964.		179	B	1316		0	599	0	517	28 50.93	89 47.68
965.		180	B	1316		0	796	0	494	28 50.92	89 47.74
966.		181	B	1416		0	590	0	394	28 49.64	89 47.78
967.		182	B	1416		0	563	0	402	28 49.63	89 47.96
968.		183	B	1416		0	476	0	362	28 49.62	89 48.07
969.		184	B	1416		32	663	25	512	28 49.62	89 48.24
970.		185	B	1416		33	328	25	249	28 49.59	89 48.47
971.		186	B	1117		205	732	159	567	28 53.62	89 48.62
972.		187	B	1117		10	365	8	306	28 53.65	89 48.71
973.		188	B	1117		3	373	3	308	28 53.68	89 48.83
974.		189	B	1117		12	369	10	306	28 53.17	89 48.97
975.		190	B	1117		0	307	0	202	28 53.74	89 49.10
976.		191	B	1119		8	399	5	256	28 56.05	89 11.81
977.		192	B	1119		0	458	0	329	28 56.13	89 11.89
978.		193	B	1119		69	2046	369	1173	28 56.14	89 11.92
979.		194	B	1119		45	722	29	463	28 56.20	89 12.02
980.		195	B	1119		7	845	4	551	28 56.24	89 12.07
981.		196	B	1118		13	617	10	493	28 16.36	88 27.04
982.		197	B	1118		9	358	7	275	28 16.35	88 27.05
983.		198	B	1118		175	843	126	610	28 16.33	88 27.10
984.		199	B	1118		0	620	0	465	28 16.29	88 27.14
985.		200	B	1118		19	579	14	429	28 16.29	88 27.19
986.		201	A	1133		0	127	0	95	28 34.25	88 10.12
987.		202	A	1133		0	245	0	196	28 34.32	88 10.03
988.		203	A	1133		1	148	1	114	28 34.43	88 09.92
989.		204	A	1133		0	166	0	123	28 34.48	88 09.89
990.		205	A	1133		2	149	1	108	28 34.55	88 09.97
991.		206	A	1133		37	288	27	217	28 34.51	88 12.38
992.		207	A	1133		0	322	0	243	28 34.55	88 12.39
993.		208	A	1133		7	459	6	362	28 34.62	88 12.36
994.		209	A	1133		44	491	34	327	28 34.67	88 12.33
995.		210	A	1133		0	134	0	99	28 34.78	86 12.29
996.		211	A	1133		41	320	32	248	28 44.45	88 13.74
997.		212	A	1133		14	301	11	236	28 44.51	88 13.74
998.		213	A	1133		0	276	0	223	28 44.58	88 13.73
999.		214	A	1133		13	244	10	195	28 44.58	88 13.70
1000.		215	A	1133		2	295	2	234	28 44.63	88 13.69
1001.		216	A	1133		0	112	0	86	28 54.65	88 15.28
1002.		217	A	1133		19	345	15	269	28 54.71	88 15.22
1003.		218	A	1133		57	686	37	541	28 54.80	88 15.17
1004.		219	A	1133		27	350	21	274	28 54.93	88 15.10
1005.		220	A	1133		3	501	2	410	28 54.99	88 15.05
1006.		221	A	1133		0	551	0	448	28 55.07	88 15.03
1007.		222	A	1133		21	557	15	409	28 55.13	88 15.07
1008.		223	A	1133		0	302	0	245	28 55.19	88 15.04
1009.		224	A	1133		0	559	0	365	28 59.27	88 15.80
1010.		225	A	1133		0	417	0	328	28 59.36	88 15.77
1011.		226	A	1133		0	167	0	155	28 04.56	88 16.52
1012.		227	A	1133		0	103	0	77	28 04.61	88 16.47
1013.		228	A	1133		0	70	0	53	28 04.69	88 16.40
1014.		229	A	1133		0	101	0	80	28 04.68	88 16.38
1015.		230	A	1133		0	113	0	91	28 04.75	88 16.34
1016.		231	A	1133		0	135	0	108	28 54.49	87 58.02
1017.		232	A	1133		7	279	6	195	28 54.47	87 57.95
1018.		233	A	1133		0	152	0	110	28 54.54	87 57.91
1019.		234	A	1133		0	227	0	174	28 54.56	87 57.89
1020.		235	A	1133		0	356	0	266	28 54.60	87 57.82
1021.		236	A	1133		16	243	13	185	28 53.61	88 01.99
1022.		237	A	1133		0	257	0	192	28 53.67	88 01.90
1023.		238	A	1133		995	770	738	572	28 53.73	88 01.88
1024.		239	A	1133		8	114	6	90	28 53.79	88 01.86
1025.		240	A	1133		0	218	0	173	28 53.81	88 01.83

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
1026.	6	241	A-1-2	9	2	19	92	0	50	52.55	88 05.07
1027.	6	242	A-1-2	9	2	19	92	15	50	52.52	88 04.94
1028.	6	243	A-1-2	9	2	19	92	11	50	52.56	88 04.80
1029.	6	244	A-1-2	9	2	19	92	8	50	52.61	88 04.86
1030.	6	245	A-1-2	9	2	19	92	11	50	52.66	88 04.82
1031.	6	246	A-1-2	9	2	19	92	0	50	51.56	88 07.74
1032.	6	247	A-1-2	9	2	19	92	0	50	51.58	88 07.71
1033.	6	248	A-1-2	9	2	19	92	0	50	51.61	88 07.68
1034.	6	249	A-1-2	9	2	19	92	0	50	51.54	88 07.65
1035.	6	250	A-1-2	9	2	19	92	0	50	51.63	88 07.58
1036.	6	251	A-1-2	9	2	19	92	0	50	50.33	88 10.93
1037.	6	252	A-1-2	9	2	19	92	0	50	50.40	88 10.89
1038.	6	253	A-1-2	9	2	19	92	0	50	50.43	88 10.83
1039.	6	254	A-1-2	9	2	19	92	0	50	50.44	88 10.75
1040.	6	255	A-1-2	9	2	19	92	0	50	50.44	88 10.69
1041.	6	256	A-1-2	9	2	19	92	0	50	50.28	88 14.45
1042.	6	257	A-1-2	9	2	19	92	0	50	50.33	88 14.39
1043.	6	258	A-1-2	9	2	19	92	0	50	50.37	88 14.26
1044.	6	259	A-1-2	9	2	19	92	0	50	50.39	88 14.21
1045.	6	260	A-1-2	9	2	19	92	0	50	50.40	88 14.14
1046.	6	261	A-1-2	9	2	19	92	0	50	50.63	88 17.85
1047.	6	262	A-1-2	9	2	19	92	0	50	50.67	88 17.82
1048.	6	263	A-1-2	9	2	19	92	0	50	50.71	88 17.81
1049.	6	264	A-1-2	9	2	19	92	0	50	50.74	88 17.78
1050.	6	265	A-1-2	9	2	19	92	0	50	50.76	88 17.76
1051.	6	266	A-1-2	9	2	19	92	0	50	50.21	88 21.50
1052.	6	267	A-1-2	9	2	19	92	0	50	50.20	88 21.55
1053.	6	268	A-1-2	9	2	19	92	0	50	50.33	88 21.54
1054.	6	269	A-1-2	9	2	19	92	0	50	50.40	88 21.53
1055.	6	270	A-1-2	9	2	19	92	0	50	50.52	88 21.51
1056.	6	271	A-1-2	9	2	19	92	0	50	50.29	88 25.13
1057.	6	272	A-1-2	9	2	19	92	0	50	50.31	88 25.09
1058.	6	273	A-1-2	9	2	19	92	0	50	50.35	88 25.07
1059.	6	274	A-1-2	9	2	19	92	0	50	50.33	88 25.04
1060.	6	275	A-1-2	9	2	19	92	0	50	50.42	88 25.02
1061.	6	276	A-1-2	9	2	19	92	0	50	50.58	88 28.20
1062.	6	277	A-1-2	9	2	19	92	0	50	50.58	88 28.24
1063.	6	278	A-1-2	9	2	19	92	0	50	50.60	88 28.19
1064.	6	279	A-1-2	9	2	19	92	0	50	50.70	88 28.17
1065.	6	280	A-1-2	9	2	19	92	0	50	50.23	88 28.14
1066.	6	281	A-1-2	9	2	19	92	0	50	50.37	88 31.39
1067.	6	282	A-1-2	9	2	19	92	0	50	50.34	88 31.26
1068.	6	283	A-1-2	9	2	19	92	0	50	50.84	88 31.24
1069.	6	284	A-1-2	9	2	19	92	0	50	50.84	88 31.20
1070.	6	285	A-1-2	9	2	19	92	0	50	50.83	88 31.17
1071.	6	286	A-1-2	9	2	19	92	0	50	50.25	88 35.39
1072.	6	287	A-1-2	9	2	19	92	0	50	50.23	88 35.43
1073.	6	288	A-1-2	9	2	19	92	0	50	50.24	88 35.48
1074.	6	289	A-1-2	9	2	19	92	0	50	50.26	88 35.55
1075.	6	290	A-1-2	9	2	19	92	0	50	50.25	88 35.61
1076.	6	291	A-1-2	9	2	19	92	0	50	50.25	88 35.71
1077.	6	292	A-1-2	9	2	19	92	0	50	50.25	88 35.75
1078.	6	293	A-1-2	9	2	19	92	0	50	50.24	88 35.82
1079.	6	294	A-1-2	9	2	19	92	0	50	50.24	88 35.86
1080.	6	295	A-1-2	9	2	19	92	0	50	50.32	88 35.92
1081.	6	1	A-1-1	9	2	19	92	0	50	50.17	88 35.97
1082.	6	2	A-1-1	9	2	19	92	0	50	50.15	88 36.01
1083.	6	3	A-1-1	9	2	19	92	0	50	50.14	88 36.06
1084.	6	4	A-1-1	9	2	19	92	0	50	50.15	88 36.11
1085.	6	5	A-1-1	9	2	19	92	0	50	50.15	88 36.15
1086.	6	6	A-1-1	9	2	19	92	0	50	50.21	88 36.21
1087.	6	7	A-1-1	9	2	19	92	0	50	50.22	88 36.28
1088.	6	8	A-1-1	9	2	19	92	0	50	50.29	88 36.29
1089.	6	9	A-1-1	9	2	19	92	0	50	50.41	88 36.41
1090.	6	10	A-1-1	9	2	19	92	0	50	50.55	88 36.55
1091.	6	11	A-1-1	9	2	19	92	0	50	50.65	88 36.65
1092.	6	12	A-1-1	9	2	19	92	0	50	50.67	88 36.67
1093.	6	13	A-1-1	9	2	19	92	0	50	50.68	88 36.68
1094.	6	14	A-1-1	9	2	19	92	0	50	50.65	88 36.65
1095.	6	15	A-1-1	9	2	19	92	0	50	50.41	88 36.41
1096.	6	16	A-1-1	9	2	19	92	0	50	50.22	88 36.22
1097.	6	17	A-1-1	9	2	19	92	0	50	50.12	88 36.12
1098.	6	18	A-1-1	9	2	19	92	0	50	50.07	88 36.07
1099.	6	19	A-1-1	9	2	19	92	0	50	50.01	88 36.01
1100.	6	20	A-1-1	9	2	19	92	0	50	50.98	88 35.98
1101.	6	21	A-1-1	9	2	19	92	0	50	50.25	88 35.25
1102.	6	22	A-1-1	9	2	19	92	0	50	50.38	88 35.38
1103.	6	23	A-1-1	9	2	19	92	0	50	50.52	88 35.52
1104.	6	24	A-1-1	9	2	19	92	0	50	50.67	88 35.67
1105.	6	25	A-1-1	9	2	19	92	0	50	50.79	88 35.79

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
1106.											
1107.											
1108.											
1109.											
1110.											
1111.											
1112.											
1113.											
1114.											
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1116.											
1117.											
1118.											
1119.											
1120.											
1121.											
1122.											
1123.											
1124.											
1125.											
1126.											
1127.											
1128.											
1129.											
1130.											
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1173.											
1174.											
1175.											
1176.											
1177.											
1178.											
1179.											
1180.											
1181.											
1182.											
1183.											
1184.											
1185.											

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
1186.	6	106					182	0	118	28 56.20	90 03.11
1187.		107					97		89	28 56.07	90 03.22
1188.		108							51	28 55.94	90 03.36
1189.		109								28 55.80	90 03.36
1190.		110								28 55.67	90 03.44
1191.		111								28 55.54	90 01.45
1192.		112								28 55.41	90 01.37
1193.		113								28 55.28	90 01.44
1194.		114								28 55.15	90 01.58
1195.		115								28 55.02	90 01.83
1196.		116								28 54.89	90 02.00
1197.		117								28 54.76	90 01.16
1198.		118								28 54.63	90 01.19
1199.		119								28 54.50	90 01.12
1200.		120								28 54.37	90 01.02
1201.		121								28 54.24	90 01.75
1202.		122								28 54.11	90 01.82
1203.		123								28 53.98	90 01.68
1204.		124								28 53.85	90 01.70
1205.		125								28 53.72	90 01.31
1206.		126								28 53.59	90 01.36
1207.		127								28 53.46	90 01.00
1208.		128								28 53.33	90 01.03
1209.		129								28 53.20	90 01.67
1210.		130								28 53.07	90 01.66
1211.		131								28 52.94	90 01.87
1212.		132								28 52.81	90 01.68
1213.		133								28 52.68	90 01.50
1214.		134								28 52.55	90 01.44
1215.		135								28 52.42	90 01.24
1216.		136								28 52.29	90 12.61
1217.		137								28 52.16	90 12.54
1218.		138								28 52.03	90 12.47
1219.		139								28 51.90	90 12.45
1220.		140								28 51.77	90 12.41
1221.		141								28 51.64	90 12.56
1222.		142								28 51.51	90 12.52
1223.		143								28 51.38	90 12.44
1224.		144								28 51.25	90 12.44
1225.		145								28 51.12	90 12.55
1226.		146								28 50.99	90 12.50
1227.		147								28 50.86	90 12.71
1228.		148								28 50.73	90 12.71
1229.		149								28 50.60	90 12.60
1230.		150								28 50.47	90 12.60
1231.		151								28 50.34	90 12.93
1232.		152								28 50.21	90 12.84
1233.		153								28 50.08	90 12.80
1234.		154								28 49.95	90 12.80
1235.		155								28 49.82	90 12.80
1236.		156								28 49.69	90 12.77
1237.		157								28 49.56	90 12.67
1238.		158								28 49.43	90 12.67
1239.		159								28 49.30	90 12.67
1240.		160								28 49.17	90 12.67
1241.		161								28 49.04	90 12.45
1242.		162								28 48.91	90 12.36
1243.		163								28 48.78	90 12.47
1244.		164								28 48.65	90 12.47
1245.		165								28 48.52	90 12.16
1246.		166								28 48.39	90 12.16
1247.		167								28 48.26	90 12.11
1248.		168								28 48.13	90 12.04
1249.		169								28 48.00	90 12.04
1250.		170								28 47.87	90 11.26
1251.		171								28 47.74	90 11.08
1252.		172								28 47.61	90 11.17
1253.		173								28 47.48	90 11.00
1254.		174								28 47.35	90 11.04
1255.		175								28 47.22	90 11.78
1256.		176								28 47.09	90 11.30
1257.		177								28 46.96	90 11.44
1258.		178								28 46.83	90 11.35
1259.		179								28 46.70	90 11.41
1260.		180								28 46.57	90 11.00
1261.		181								28 46.44	90 11.05
1262.		182								28 46.31	90 11.10
1263.		183								28 46.18	90 11.10
1264.		184								28 46.07	90 11.82
1265.	6	185								28 46.09	90 11.82

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
1266.	6	201	1	1	6	32	98	15	46	54.23	90 12.90
1267.	6	202	2	1	6	0	0	0	90	54.24	90 12.70
1268.	6	203	3	1	6	0	0	0	61	54.07	90 12.91
1269.	6	204	4	1	6	0	0	1	139	53.96	90 12.85
1270.	6	205	5	1	6	0	0	0	58	53.89	90 12.83
1271.	6	206	6	1	7	0	0	0	33	53.95	90 08.47
1272.	6	207	7	1	7	0	0	0	60	54.03	90 08.43
1273.	6	208	8	1	7	0	0	0	41	54.80	90 08.46
1274.	6	209	9	1	7	0	0	0	72	54.80	90 08.46
1275.	6	210	10	1	7	0	0	0	50	54.70	90 08.47
1276.	6	211	11	1	5	0	0	0	71	54.64	90 33.45
1277.	6	212	12	1	5	0	0	1	102	54.70	90 33.26
1278.	6	213	13	1	5	55	68	36	82	54.66	90 33.22
1279.	6	214	14	1	5	0	0	0	149	54.73	90 33.11
1280.	6	215	15	1	5	0	0	1	136	54.68	90 33.14
1281.	6	216	16	1	4	33	55	26	57	55.12	91 58.72
1282.	6	217	17	1	4	26	37	25	69	55.27	91 58.69
1283.	6	218	18	1	4	30	70	24	75	55.40	91 58.73
1284.	6	219	19	1	4	36	98	29	82	55.33	91 58.25
1285.	6	220	20	1	4	40	96	32	90	55.35	91 57.93
1286.	6	221	1	1	8	0	0	0	148	12.84	93 04.86
1287.	6	222	2	1	8	0	0	0	93	12.90	93 04.83
1288.	6	223	3	1	8	0	0	0	157	12.94	93 04.88
1289.	6	224	4	1	8	0	0	0	109	12.98	93 04.84
1290.	6	225	5	1	8	0	0	0	69	13.09	93 04.81
1291.	6	226	6	1	2	0	0	0	116	08.71	94 01.38
1292.	6	227	7	1	2	0	0	0	88	08.88	94 01.10
1293.	6	228	8	1	2	0	0	0	63	08.91	94 01.10
1294.	6	229	9	1	2	0	0	0	71	08.97	94 01.20
1295.	6	230	10	1	2	0	0	0	56	09.00	94 01.25
1296.	6	231	11	1	3	0	0	0	134	15.10	95 13.13
1297.	6	232	12	1	3	0	0	0	88	15.48	95 11.64
1298.	6	233	13	1	3	0	0	0	145	15.37	95 11.91
1299.	6	234	14	1	3	0	0	0	88	15.50	95 11.78
1300.	6	235	15	1	3	0	0	0	113	15.75	95 11.50
1301.	6	236	16	1	3	0	0	0	140	17.10	95 17.57
1302.	6	237	17	1	3	0	0	0	92	17.15	95 17.61
1303.	6	238	18	1	3	0	0	0	78	17.06	95 17.77
1304.	6	239	19	1	3	0	0	0	76	17.15	95 17.76
1305.	6	240	20	1	3	0	0	0	116	17.10	95 17.74
1306.	6	241	1	1	9	0	0	0	78	22.06	95 16.35
1307.	6	242	2	1	9	0	0	1	171	22.20	95 16.20
1308.	6	243	3	1	9	0	0	0	66	22.18	95 16.28
1309.	6	244	4	1	9	0	0	0	82	22.23	95 16.22
1310.	6	245	5	1	9	0	0	0	75	22.21	95 16.33
1311.	6	246	6	1	9	10	20	2	61	22.61	95 16.55
1312.	6	247	7	1	9	0	0	0	88	22.65	95 16.85
1313.	6	248	8	1	9	0	0	0	85	22.67	95 16.95
1314.	6	249	9	1	9	0	0	0	85	22.76	95 16.91
1315.	6	250	10	1	9	0	0	0	84	22.70	95 16.88
1316.	6	251	11	1	9	0	0	1	118	22.82	95 16.55
1317.	6	252	12	1	9	0	0	1	113	22.88	95 16.50
1318.	6	253	13	1	9	0	0	0	96	22.90	95 16.46
1319.	6	254	14	1	9	0	0	0	90	22.90	95 16.46
1320.	6	255	15	1	9	0	0	0	124	22.84	95 16.62
1321.	6	256	16	1	9	0	0	0	61	22.61	95 17.00
1322.	6	257	17	1	9	0	0	0	122	22.72	95 17.53
1323.	6	258	18	1	9	0	0	0	109	22.76	95 17.51
1324.	6	259	19	1	9	10	27	1	87	22.87	95 17.45
1325.	6	260	20	1	9	0	0	0	111	22.97	95 17.44
1326.	6	261	1	1	10	0	0	0	93	23.01	95 20.03
1327.	6	262	2	1	10	0	0	0	105	23.02	95 20.03
1328.	6	263	3	1	10	0	0	0	80	23.16	95 20.05
1329.	6	264	4	1	10	0	0	0	124	23.11	95 20.75
1330.	6	265	5	1	10	0	0	0	90	23.07	95 20.26
1331.	6	266	6	1	10	0	0	1	111	23.13	95 20.00
1332.	6	267	7	1	10	0	0	0	88	23.21	95 20.00
1333.	6	268	8	1	10	0	0	0	120	23.28	95 20.00
1334.	6	269	9	1	10	0	0	0	93	23.24	95 20.00
1335.	6	270	10	1	10	0	0	0	107	23.28	95 20.07
1336.	6	271	11	1	10	0	0	0	62	23.35	95 20.04
1337.	6	272	12	1	10	0	0	1	81	26.44	95 20.08
1338.	6	273	13	1	10	0	0	0	70	26.48	95 20.05
1339.	6	274	14	1	10	0	0	1	102	26.53	95 20.04
1340.	6	275	15	1	10	0	0	0	55	26.56	95 20.03
1341.	6	276	16	1	10	0	0	0	75	31.44	95 31.24
1342.	6	277	17	1	10	0	0	0	140	31.40	95 31.25
1343.	6	278	18	1	10	0	0	0	100	31.52	95 31.27
1344.	6	279	19	1	10	0	0	0	150	31.66	95 31.19
1345.	6	280	20	1	10	20	79	15	65	31.66	95 31.26

Table 11 cont.

	Cruise	Sample No.	Site ID	Sample ID	Site ID	Dry 403	Dry 274	Wet 403	Wet 274	Latitude	Longitude
1346.	0	281	[illegible]	10	[illegible]	0	131	0	114	95	10.
1347.	0	282	[illegible]	10	[illegible]	[illegible]	2[illegible]0	[illegible]	[illegible]	95	10.
1348.	0	283	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1349.	0	284	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1350.	0	285	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1351.	0	286	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1352.	0	287	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1353.	0	288	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1354.	0	289	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1355.	0	290	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1356.	0	291	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1357.	0	292	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1358.	0	293	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1359.	0	294	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1360.	0	295	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1361.	0	296	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1362.	0	297	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1363.	0	298	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1364.	0	299	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1365.	0	300	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1366.	0	301	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1367.	0	302	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1368.	0	303	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1369.	0	304	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1370.	0	305	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1371.	0	306	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1372.	0	307	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1373.	0	308	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1374.	0	309	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1375.	0	310	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1376.	0	311	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1377.	0	312	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1378.	0	313	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1379.	0	314	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.
1380.	0	315	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95	10.